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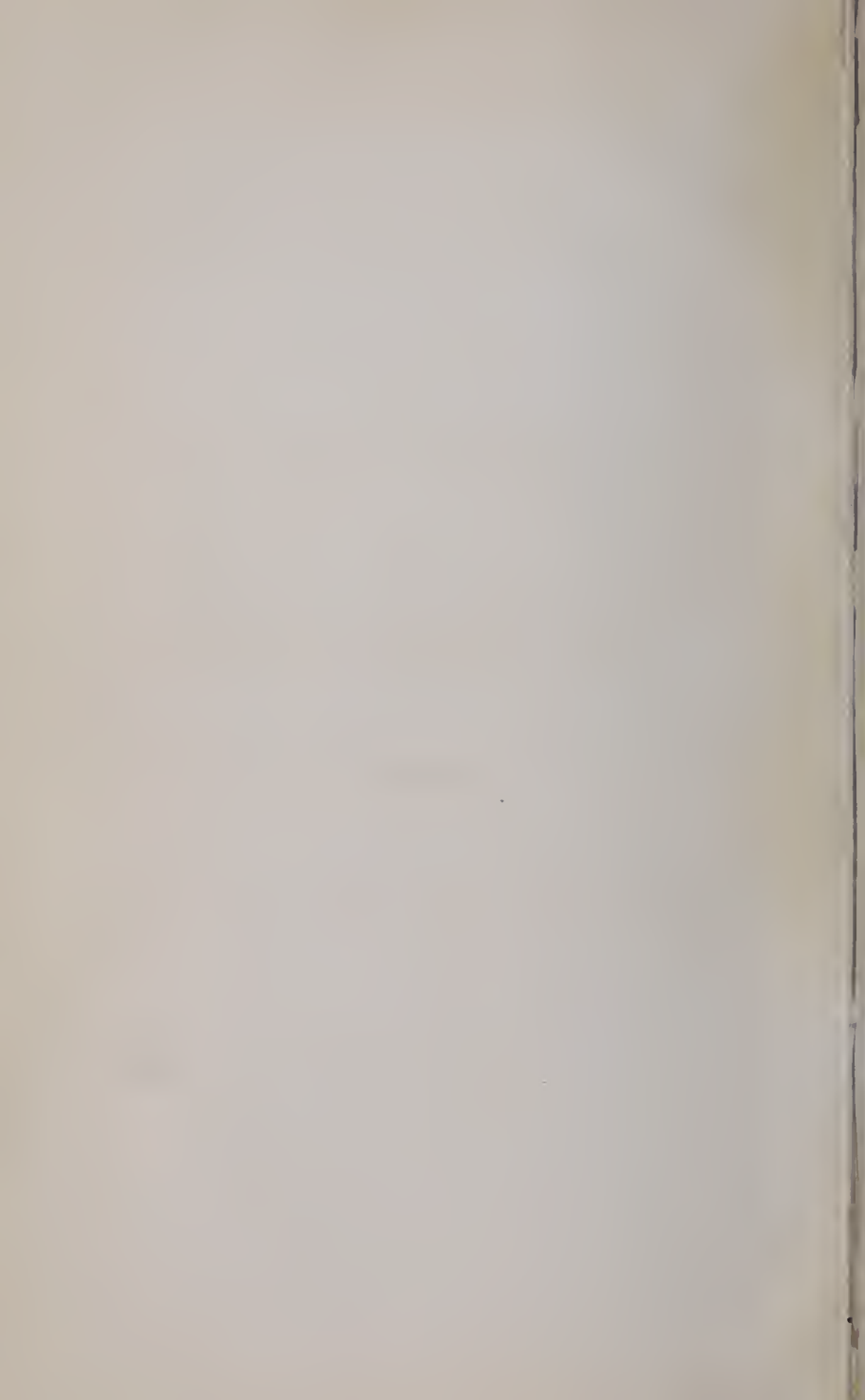
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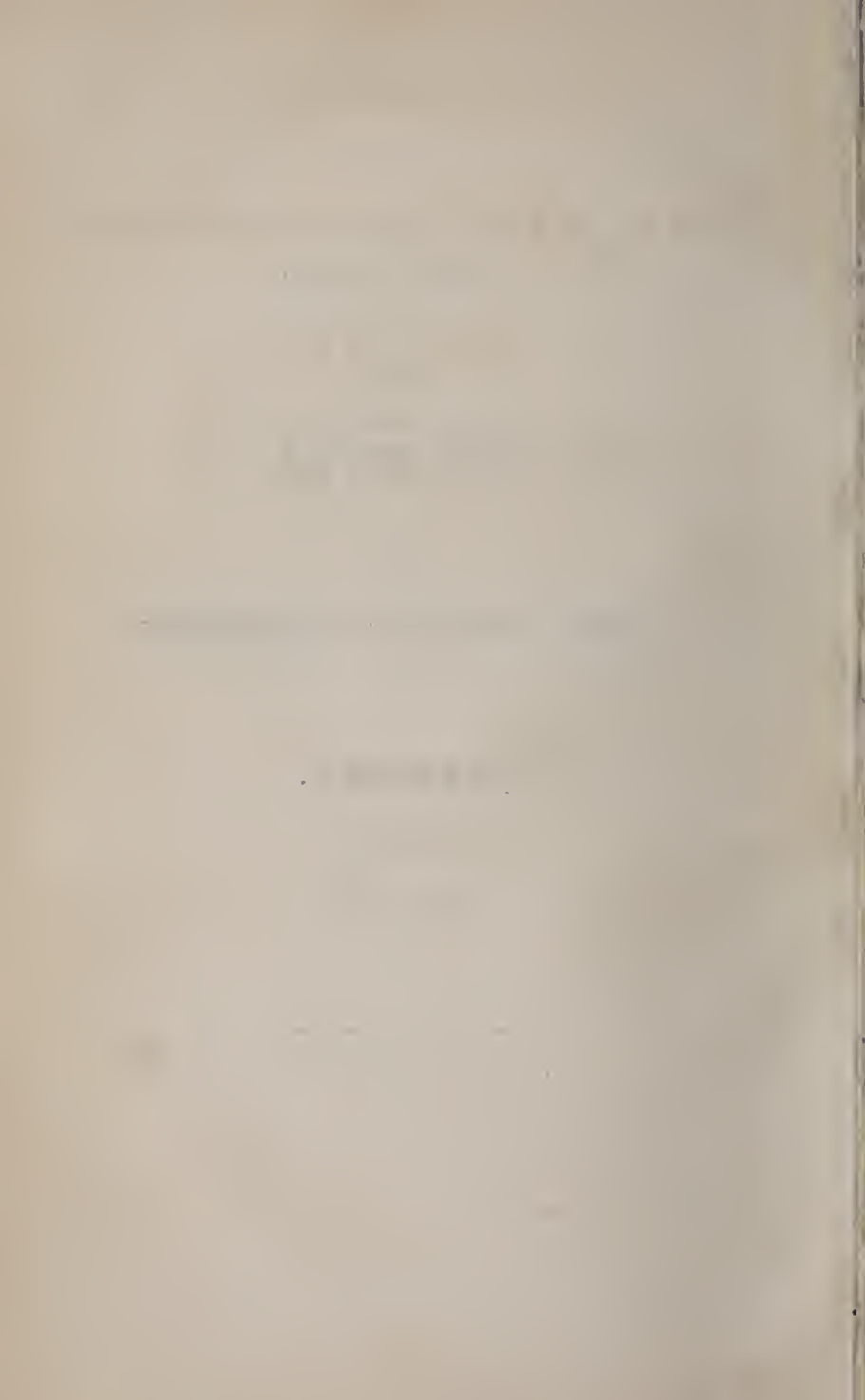


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VOL. III.



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EDITED BY
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SECRETARY OF THE AS. SOC., AND HON. MEM. OF THE AS. SOC. OF PARIS.

VOL. III.

JANUARY TO DECEMBER,
1834.

“It will flourish, if naturalists, chemists, antiquaries, philologists, and men of science, in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta; it will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease.”

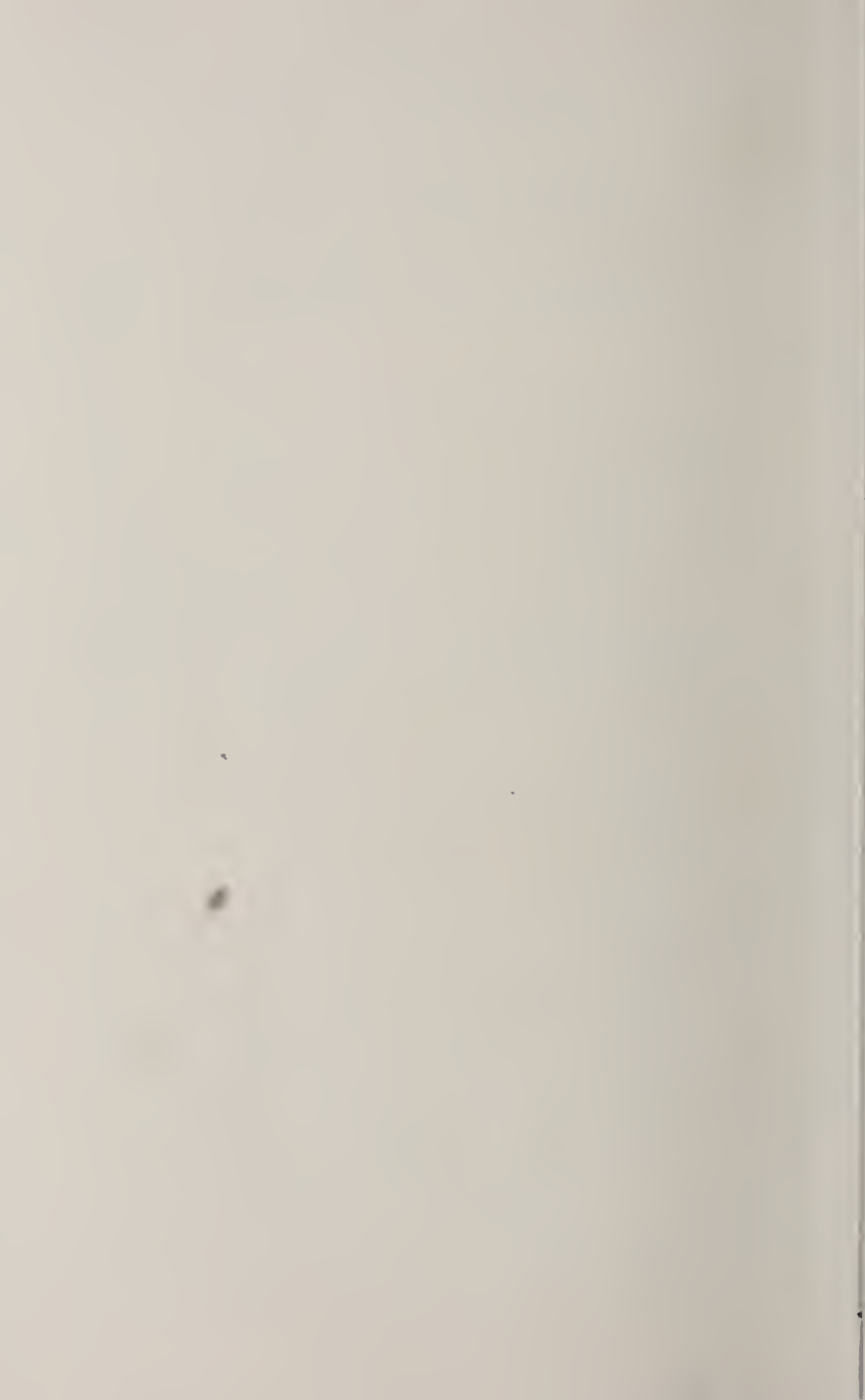
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JOURNAL

OF

THE ASIATIC SOCIETY.

No. 32.—August, 1834.

- I.—*Memoir on the U'sbek State of Kokan, properly called Khokend, (the Ancient Ferghana,) in Central Asia. By W. H. WATHEN, Esq. Persian Secretary to the Bombay Government, &c.*

[Read at the Meeting of the 6th August.]

DURING the last few years, circumstances have taken place which have caused the Muhammedan inhabitants of Central Asia, and even of Chinese Tartary, to prefer, in performing their pilgrimage to Mecca, the circuitous route of Bokhára or Samarkand, Kúndúz, Taush Kurgáún, Balkh, Kábul, Kandahar, and Kelautí-Nasír, and Bela, to Somniany, whence they pass in boats to Bombay, and from the latter port to Judda, to either the road through Russia round the Caspian viâ Astrakhan, or the more direct one through Persia.

The causes which have led to this change of their accustomed route, which was through Russia, are said to be—first, some misunderstanding betwixt the Cossac tribes, under the influence of Russia, and those of the Kokan prince, in consequence of which, the Russian government is said to have stopped the communication through its territory. With regard to Persia, the bigotted feelings of its inhabitants, who are Shíahs, against the Tartars, who are of the opposite sect of the Sunís, has long deprived the pilgrims from Tartary of all access to its territory, so that there remains no other way of performing the pilgrimage except through the Afghan provinces.

These circumstances have led to the resort of pilgrims to Bombay, from countries situate in the very heart of Asia. I calculate that within the last two years, at least three hundred zealots of this description have arrived at Bombay from the cities of Bokhára, Samarkand,

Kokan, and Yárkend. Among those who arrived during the present year, 1834, was a noble of high rank of Kokan; his name was КНОЖА БЕХА́ДУР КХА́Н, who held the title of КХУ́'Ш БЕ'ГИ, and was prime minister to the prince of that country; his son, said to be foster-brother to the same prince, and a suite of about twenty followers, accompanied him.

On my hearing of the arrival of these illustrious strangers, I took the first opportunity of forming an acquaintance with them, with the view of obtaining information respecting the state of things in a country so little known* to Europeans, and I collected the following particulars.

In the first place, I shall endeavour to describe the geographical situation of this country, as well as the information received will enable me.

The principality of Kokan appears to be situated between the parallels of from thirty-nine degrees to fifty-five degrees of north latitude, and to extend from the sixty-fifth to the seventy-fifth degree of east longitude.

On the east, it is bounded by the country of Káshgar, in Chinese Tartary, the river Oxus or Amú is its limit; to the south-east, Badakhshan, Kaviategín, and Derwáz; west, it is bounded by the Bokhára territory; and north and north-west, by Russian Tartary, and the Steppes occupied by the roving Cossacs, under the influence of Russia.

This country, with the exception of the Steppes adjoining the Russian frontiers, and the sandy deserts lying betwixt it and the Bokhára territory, is said to be very populous and fertile, and being watered by many streams and rivers, which have their source in the Ulugh Tágh, and other mountains, and which mostly flow into the Sir or Sihún, the ancient Jaxartes, all the fruits of temperate climates are produced in great abundance, especially apples. The melons are very superior. Barley and wheat are also raised, the former in great quantity.

A few words will suffice to give the history of this country:—Tradition states it to have been under the rule of АФРА́СИА́Б, king of Turán, whose wars with the Persians are commemorated in the Sháh-náma of FIRDÓUSÍ. The present city of Turkistán is said to have been his capital. It was overrun by the Arabs in the third century of the Hijra. Subsequently the Sultáns of the Samání dynasty annexed it to their empire. It then fell, in the thirteenth century, with the rest of Asia, to the conquering armies of CHENGÍZ KHÁN†; afterwards, on the

* It has not been visited by Europeans, I believe, since the 14th century.

† On the death of CHENGÍZ, it became the portion of his eldest son JA'GHATA'I, or CHAGHATAIR.

decline and division of the Mongol Empire, under his successors, it was conquered by the famous AMÍR TIMU'R, who bequeathed it to one of his sons: from whom it descended to the famous BÁBER, who reigned at the city called at present Andeján, but which was formerly called Almálj, or "The Place of Apples," from the number of orchards of apple trees, by which it was surrounded. Shortly after the accession of BÁBER, about 1520*, the U'sbek Tartars were forced by the rising power of the Russians to abandon the southern parts of Siberia, &c., which had formed part of the Tartar kingdom of Kiptchak; on their way southward, under the command of their leader SHUBÁNÍ KHÁN, they overran all the states of Central Asia, Bokhára, Samarkand, &c., and after a brave resistance, BÁBER, among the rest of the princes of that country, was obliged to abandon his patrimonial kingdom, and fly to Kábul, where he fixed his government, and whence having concentrated his forces, he invaded India, took Delhi in 1526, and there established the present Moghul dynasty; ever since the flight of BÁBER, the country of Kokan has been governed by U'sbek princes, who trace their descent from CHENGÍZ KHÁN, and who transferred the capital from Andeján to Kokan.

The state of Kokan consists of eight extensive governments, each deriving its name from its chief town; these are—to the south-west of the city of Kokan the fortified town of Urutippa, and its dependent district; to the west, the ancient city and dependancy of Kojend on the Sihun or Jaxartes; to the south-east, the districts of Uch and Marghilan; to the north-east, Nemengán and Andeján: to north and north-west, the cities of Táshkend and Turkistán, with their districts: these with Kokan form together eight distinct governments.

The districts of Táshkend was till lately under a separate chief, who was a Syed called YONÍS KHOJEH†, but has been taken from his sons by the present KHÁN of Kokan.

The governors of all these provinces are appointed and removed by the KHÁN, or king, at pleasure; they are all military commanders, and generally hold the rank of Ming-Báshís, or commander of one thousand horse. The king is not, as in Persia, dependent for support on the warlike tribes, but keeps up a standing army of cavalry, which is supported by an allowance of grain and forage from the districts in which they

* They are called U'sbek from a descendant of CHENGÍZ KHA'N, who was the head of the golden horde, and so beloved, that they adopted his name. In like manner the Noghai Tartars have obtained their peculiar appellation; they belonged to the Great Horde.

† Khojeh is a title given by the Tartars to Syeds, as Sherif in Turkey, and Meer and Shah in India.

are stationed, besides a small amount of pay. The use of infantry is unknown. The KHÁN is said in cases of emergency to be able to bring 50,000 horse into the field.

Most of the inhabitants of this kingdom, with the exception of the Cossac hordes, on the borders of Russia and the Karghiz, towards Káshgar, are U'sbeks, who cultivate the ground themselves. In some parts there are Tájiks*, or people of Persian extraction, who speak that language, and are as serfs to the U'sbek lords, whose estates they cultivate.

Kokan, the capital, is said to be a very large and populous city, it is not surrounded by a wall; its population is reported to exceed that of Bokhára, and it is said to contain one hundred colleges and five hundred mosques†; the number of its inhabitants is rated at 100,000; it has many beautiful orchards, and is situated upon two small rivers, called the Aksái and the Kárásái, which fall into the Sihun or Jaxartes, near Kojend. It contains a large colony of Jews; about twenty Hindus, and many Cashmerians; no Armenians; but there are some Noghai Tartars from Russia, especially one, who is a watch-maker.

The Ulema, or literati, are well read in the Persian classics, and the Persian language is spoken with nearly the same accent as by the Afgháns; the dialect differs much from that now used in Persia, and more resembles that of the 16th century. Many Turki compositions are also read and admired; the Turki spoken in this country, is what is called the Jágghatái‡, and differs much from the Turki of Constantinople, which however derives its origin from it.

The climate seems to verge on extremes:—in the winter, great cold prevails, and much snow falls; in the summer again the heat is oppressive.

The natives are as bigotted Muhammedans as those of Bokhára. A mohtesib goes round and bastinadoes any one caught smoking tobacco.

* The word Tájik was first used to distinguish those who had been subject to the Arab rule in contradistinction to the invading Turks.

† I suspect my informant of some exaggeration here.

‡ The Jágghatái Turki is the language of Central Asia, from the river Ural to the Oxus, and from the Caspian to Yarkend, (in many of the cities however Persian is generally spoken and understood;) this refined dialect of the ancient Turki was called Jaghatai, from having been much polished and refined during the reign of JAGHA'TA'I KHA'N, the son of CHENGÍZ. From this language is derived the language of the Turki of Constantinople, of the Turkmen, and of the Elluat of Turkish origin in Persia, though these dialects differ considerably now from the mother tongue, and in the Usmalú Turki, so much Arabic and Persian has been introduced as to render this language very difficult to be understood by the natives of Tartary.

Wine and dancing women are most strictly prohibited. They are of the Suní sect, and follow the observances of ABU HANIFEH ; they detest Shíahs, and call them worshippers of ALI. Much smoking and drinking of kimmiz* privately does take place. Horset† flesh is considered a great luxury, and often sold in the bazars.

The present KHÁN or king (for KHÁN is considered a very high title in Tartary) is named MAHOMED ALI : his father was OMÁR KHÁN ; his uncle, who reigned conjointly with his father, was named A'LIM KHÁN ; their father was NAUR BUTEH KHÁN, whose grand-father was SHURUGH BE'G, who claimed his descent from CHENGÍZ KHÁN. The present KHÁN succeeded on his father's death, which happened about twelve years ago.

I shall now attempt to portray the political relation in which this state stands with reference to its neighbours, and give an account of them ;—and first of Chinese Tartary. That part which is contiguous to Kokan is the government of Káshgar, which has under it the provinces of Yárkend, Khoten, Auksú, and Turfán, (called by the Chinese Sining ;) these are all Muhammedan countries, which became subject to China in 1759, in the reign of the Emperor‡ KIENLUNG. Hostilities existed some years ago betwixt Kokan and China, but after a war of some continuance, the cause of which I shall hereafter explain, peace was concluded betwixt the KHÁN and the Chinese, and is likely to be permanent.

South of the KHÁN's territory is the extensive and mountainous country of Karrategín, until of late ruled by sovereigns universally believed by the tradition of the country to be descended from ALEXANDER THE GREAT. On the death of the last Shah, or king, his sons disputed and fought amongst themselves for the succession, and in consequence, their kingdom fell an easy prey to the king of Derwáz, a Tájik prince, and is still under his rule : these unfortunate descendants of ALEXANDER are said by my informants to be wandering about in poverty, and subsisting on the charity of the surrounding princes. Several were at Kokan, and others at Bokhára.

Badakhshán, and the countries of Kundúz, Tash-kurghan, and Balkh are under a powerful U'sbek chief called MURÁD ALI BE'G, who lately acquired Balkh, &c. from the sons of KILICH ALI KHÁN. With these states and the KHÁN of Kokan a good understanding exists.

* A spirituous liquor made from mare's milk.

† Horses having any defect, disabling them from work, are fattened for this purpose.

‡ The same Emperor to whose court Lord MACARTNEY went as Ambassador.

BEHÁDUR KHÁN, son of MURÁD BE'G, is the reigning prince of Bokhára and Samarkand, and their dependencies; the last named city is at present much reduced in both size and population: there are several magnificent remains of the buildings erected by the famous TIMÚ'R, and there is among the rest, a block of blue marble or jasper called the *Kúk-Tárish*, formerly used as a throne by the Tartar emperors, and said to have been brought by TIMÚ'R from one of CHENGÍZ KHÁN'S palaces in Mongol Tartary*, which to this day is an object of great importance to the Chinese, who wish to take it to China from some superstitious ideas they connect with it, and the prosperity of the present Mantchu dynasty.

The present KHÁN of Kokan is on terms of amity with the sovereign of Bokhára.

The part of the Russian Empire which touches on this territory is dependent on the government of Orenburg and Tomsk. The boundary of the two states is defined by the river called by the U'sbeks the Kúk-Sú, or blue river, probably the Irtish.

The political relations of this state with Russia are as follows:

Much uncertainty having prevailed respecting the limits of the two nations, and disputes having constantly occurred, owing to the Cossac hordes of the one encroaching upon the Steppes occupied by those of the other, and vice versâ, about six or seven years ago envoys were deputed by Russia to the KHÁN of Kokan, to fix the limits definitively; these envoys came from Orenburg, and brought with them as presents from the emperor, (whom the U'sbeks call the AUK KHÁN, or White King,) several mirrors of very large dimensions, a musical clock, and guns and pistols. After some negociation, it was settled that the river called the Kúk-Sú, or blue river, should be the boundary between the two states, the Cossac hordes of Russia keeping to the north of it, and those of either state not to pass that river to the south or north. Beacons also were erected along the line of frontier. My informants said, however, that within the last three years the Russians have encroached upon those limits, and erected forts to the south of the river. The KHÁN on this account lately deputed an envoy to St. Petersburg, with an elephant and some Chinese slaves, as a present to His Czarish Majesty, of whose

* The following is an account of this wonderful block of marble or jasper, as given by BA'BER in his memoirs:—"Towards the hill of Kohik, there is a small garden, wherein is an open hall, within which is a large throne of a single block of blue jasper, about 28 or 30 feet long, and 10 or 16 broad, and 2 in height. This throne was said to have been brought from Chinese Tartary, probably from one of CHENGÍZ KHÁN'S Urdís."

arrival however no news had been received, when my informants left their country about a year ago.

With respect to the other great empire, China, which lies to the eastward of this country, a good understanding seems to have existed for many years between the two governments, until a circumstance occurred about seven or eight years ago, which led to hostilities; this was the rebellion of *JEHÁNGIR KHOJA* of *Káshgar*: this person, who laid claim to the sovereignty of that country, and whose ancestors are said previous to the Chinese conquest to have held the chief authority there, having been worsted in some encounter with the Chinese, was compelled to fly the country, and take refuge with the roving hordes of *Kirghiz* subject to the *Khán*, and subsequently fell into the hands of *MUHAMMED ALI*, who kept him under honorable restraint at his capital. *JEHÁNGIR* having however effected his escape, made his way again to the *Kirghiz* encampments, and having prevailed on them to join him, invaded the Chinese territory. The sovereign of *Kokan* also being irritated at the bad treatment shewn to the *Muhammedan* subjects of *Tartary* by the Chinese authorities, advanced with his troops on *Káshgar*; surprized the Chinese general in his cantonment near that place, and cut up the Chinese army. The *KHOJA* also got possession of the city and fort of *Káshgar*; subsequently the *KHA'N's* cavalry over-ran the whole of Chinese *Tartary*, and got possession* of *Yárkend*, *Auksú*, and *Khoten*. *JEHÁNGIR KHOJA* however becoming jealous of the *KHA'N*, and suspicious of treachery, drew off his troops in a northerly direction, and a large Chinese force advancing, *MUHAMMED ALI* withdrew to his own country. The rebel was eventually seized by the Chinese, sent to the emperor, and cut to pieces in his presence. An envoy was then sent from *Pekin*, (which the *U'sbeks* call *Baujin*), to negotiate peace, which was made on condition of the *Muhammedans* at *Káshgar* being subjected to the rule of a deputy of the *KHÁN* in all matters of religion, the *KHA'N* being allowed a share in the transit duties, and binding himself to keep the *Kirghiz* in subjection, and to assist the Chinese in case of any insurrection in Chinese *Tartary* in future; ever since which time, the two governments have been on the best terms, and a reciprocal interchange of presents takes place. The present Chinese Governor of *Káshgar* is a *Muhammedan*, called *YUNIS WANG*. The Chinese are said to keep a force of about twenty thousand infantry in their *Muhammedan* dependencies in *Tartary*, of which ten thousand are stationed at *Káshgar*. The Chinese troops are said to be stationed in separate cantonments, which the *U'sbeks* term *Gulbághs*, outside of the towns. One of my informants had been at *Káshgar*, *Yárkend*, and

* The *KHA'N* has hence taken the title of *GHAZI* or Victorious over infidels.

Khoten, with the KHÁN's army; he describes Yárkend as a very beautiful large city, much like Bombay, and abounding in dancing girls, musicians, &c. They made slaves of all the Chinese they took prisoners.

The Chinese viceroy resides at Káshgar; he is generally a Mantchu* (Mantchu Tartar) appointed from Pekin, as are the governors of Turfán, Auksú, Yárkend, and Khoten; they are all however subject to the Ugarh Wang, or viceroy. These countries have been subject to China about seventy-five years. The distance from Káshgar to Pekin is estimated as two months' journey of a caravan. All these cities contain a considerable population of Chinese colonists, besides the original Muhammedan inhabitants.

The Jágathái Turki is principally spoken; but Mantchu and Chinese are also prevalent.

*On the Commercial Intercourse between Kokan and the
neighbouring states.*

Free intercourse is allowed by the Chinese government to subjects of Kokan resorting to Káshgar and the other Muhammedan dependencies of that empire, for purposes of commerce. Religious mendicants are also admitted; this permission is however solely extended to those countries. No one of whatever denomination would be allowed to enter China Proper under any pretence whatever, even in case of an embassy: it is necessary for application to be made to the Viceroy YUNIS WANG, at Káshgar, and no one is allowed to proceed until an order be received from Pekin.

The trade between the two countries is conducted as follows: caravans come from Southern China by way of Khoten to Yárkend and thence to Káshgar; they bring tea glued together, and formed into the shape and consistency of unbaked bricks; silk piece goods, satin, porcelain, and various other articles. Tea, however, is the principal article of import: its consumption being general throughout Central Asia, where it is made much in the same way as in Europe, excepting that butter or fat is mixed with it. The merchandize is carried chiefly on horses, from thirty to forty bricks of tea form a load for a horse. From Káshgar the U'sbek merchants bring them to Kokan, whence they are exported on camels to Bokhára. The returns are said to be made in shawls, European articles, raw silk, horses, &c. No direct intercourse exists betwixt Kokan and India, owing to the jealousy of the Chinese government. The passage through Tibet to Cashmere, &c. is interdicted. Shawls and other Indian articles are brought by the circuitous route of Kábul, Balkh, and Bokhára.

* Many are Muhammedans.

The trade with Russia is carried on by means of caravans : the Kokan merchants meet those of Bokhára at Tashkhend, and forming one body, they proceed viá Turkistan through the Steppes occupied by the Cossacs, part to Omsk, and part to Orenburg. The productions of China, raw silk, camlets, and cotton yarn, are taken to Russia, and the returns are made in furs, gun barrels, and locks, cutlery, Russian leather, and other Russian manufactures. The currency of Kokan consists of gold tillas, equal to about eight rupees in value, and a small silver coin, called a tunkha, nearly equivalent to half a rupee.

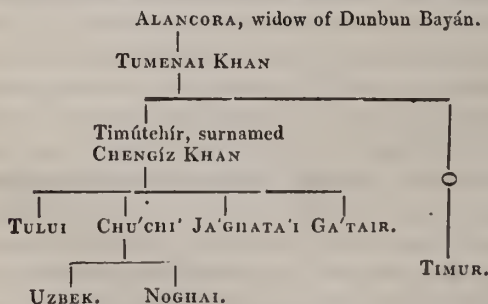
The Usbeks who came to Bombay were quite ignorant of the English name and government. The only Feringís they had any idea of were the Russians. On being asked what nation they supposed was the sovereign of Hindustán, they said they thought it was like Kábul and Kandahar, under some Mussulman government; they expressed great horror at the Sikhs not allowing the Muhammedan religion to be publicly performed in the Panjáb. They had first of all intended to go to Delhi, and thence to Calcutta, but this circumstance prevented them. They had strong letters of recommendation from DOST MUHAMMED of Kábul to SULTÁN MUHAMMED KHAN of Peshawar, &c. They were generally liberal and well-informed. The young man had read most of the Persian classics, and spoke Persian very well. They were much astonished at every thing they saw at Bombay, which they compared to the Chinese city of Yarkend. I took them a trip in the small steamer, which they considered as the work of magic, nor could I explain the effects of steam so as to remove that idea. His Majesty's ship *Melville*, being in the harbour, I carried them on board her. At first they could not be persuaded that it was a ship : they thought it was a wooden fortress, erected on the bottom of the sea, by some extraordinary power. Subsequently, however, when they found she actually floated, they were more astonished at what they called the great boat, for they had no word to express a ship in their language, nor had they even seen any thing larger than the ferry boats on the Oxus, and the country vessels in which they came to Bombay. Different from most Asiatics, they shewed a great deal of curiosity, and examined every thing narrowly : they measured the ship by the number of paces they took, and the cannon ball by its apparent weight ; but what astonished them most of all was the firing cannon with a lock like that of a gun, and ignition as produced by a percussion tube. A native having illuminated his house with gas, I took them to see it : here again they could not account for such an effect, except as produced by magic ; they frequently expressed a wish that some Englishman would come to their country, and professed their readiness to assist him in penetrating even into Chinese Tartary ; but they said that it would be next to impossible to enter China proper :

they invariably spoke of China by the name *Kathái* (cathay) and the emperor as the *Khákhán*. Russia, they called *Urús*. They were highly amused at the races, but said theirs which are held once a year were very superior. The English ladies they admired very much, but asserted their own were as fair and had more colour. The dress of the Usbeks is generally a small round cap of ermine, a large flowing robe with an under dress and broad flowing trowsers; like the Usmanloos they wear a broad leathern belt round the waist. When they go out they always wear boots of black or shagreen leather; their arms were Chinese short swords, and matchlocks with Russian barrels and daggers.

They mentioned the fact of dreadful earthquakes having occurred in their country about three or four years ago. The Cholera also had extended its ravages to the territory of their Khan.

It is proper that I should state that this information was collected casually and in the course of many conversations I had with these persons; there may be some exaggeration, but I believe it may generally be depended upon. The Usbeks are a very straightforward, honest, and simple people, very unlike the Persians or other Asiatics, and much more approaching in their disposition and manners to Europeans. With regard to the rebellion of *JEHANGIR KHOJEH* in Chinese Tartary, the truth of what they stated was fully borne out and verified by *Mr. LINDSAY*, the late Secretary to the Select Committee at Canton.

In order to give a correct idea of the geographical situation of the kingdom of Kokan, I have appended to this memoir a map* of Central Asia, drawn up from the best authorities within my reach. The following genealogical table will also be useful to shew the descent of *UZBEK*, the founder of this horde, from *CHENGÍZ KHAN*.



The tribes collected by *UZBEK* conquered Transoxiana, &c.

The *NOGHAI* horde was subdued by the Russians, and these Tartars are now scattered throughout Siberia.

* We regret being obliged to omit this map, which however necessarily contains no matter new to geography, beyond perhaps the extension of the sway of the *KHA'N* of Kokan, as far north as the river Irtysh. Any good map of Central Asia will be sufficient to elucidate the memoir.—ED.

II.—*Note of a Pilgrimage undertaken by an Usbek and his two Sons from Khokend or Kokan, in Tartary, through Russia, &c. to Mecca. Obtained in conversation with the parties, by W. H. WATHEN, Esq. &c.*

About fourteen years ago, A. D. 1820. our father had a house and small estate in the city of Kokan: this he sold for four hundred gold pieces, (a tila of Kokan is equal to about eight rupees,) or rather more than three thousand rupees, and having determined to abandon worldly cares, and commence a religious life, he took leave of all his friends and relations, and proceeded on a journey, with the view of performing a pilgrimage to the sacred cities of Mecca and Medina. We went from Kokan to Táshkend, which is eight days journey of a caravan: this is a large city, enclosed with a wall, and had been lately taken by our king from YUNIS KHOJA'S sons; their father had held it as a fief from our government. At Táshkend we waited some days, until the caravan for Russia took its departure: the caravan consisted of about 50 or 60 persons, mostly Bokhára and Táshkend people. From Táshkend we then proceeded to a fortified town, called Turkistán, of rather smaller consequence than Táshkend. Leaving this city, we arrived in about ten days at a small place named Sozák. After this, we saw no more fixed habitations, until we had entered the Russian territory. The country consisted of immense Steppes of pasture land, the grass growing to a prodigious height, and it was occupied by hordes of Kuzzáks, who dwelt in small black tents, and ranged about from place to place. After passing through the hordes of Kuzzáks subject to our sovereign, we arrived at the river called the Kúk-Sú, and on crossing it found the country occupied by Kuzzáks, dependent on the Russian king, (A'k Padshah, or White King.) We then arrived at a small place called Shumí: here the Russians collected a toll from the people of the caravan; but on being told we were pilgrims, they left us alone: the caravan dispersed at Shumí. We staid at this town two months, and lodged with a Nogai Tartar. We were two months on our journey from Tashkend to the Russian territory. We hired three kibitkas from the Nogais, and went in fifteen days to Omsk, which is a large fortified town. The Russian soldiers, dressed like yours, stopped us at the gates, but on being told we were pilgrims, allowed us to pass. We staid ten days there with a Nogai. We got a passport in the Russian language, from a great man, whom they called General; he had long festoons of gold hanging from his shoulders, and was dressed in black (dark-green). We left Omsk, and after passing through many places, the names of which we do not remember, we arrived at a very large and ancient city, called Kazán. We were allowed to pass at the gates on shewing the passport we had obtained at Omsk. We travel.

led in kibitkas, or carriages drawn by one horse. We staid four months at Kazán, during which was the month of Ramazan; we lived with a Nogai Tartar. We resolved to go by water thence to Astrakhán, (the journey by land takes forty days.) At about one hour's distance from Kazán, we came to a large river*, and we embarked with several other merchants, Tartars, and Russians, on board a large boat about the size of a patéla; the owner of the boat was a Russian. About half way to Astrakhan, on the right bank of the river, our boat came to anchor off a large town named Sarat, where we staid six days: this town is smaller and more modern than Kazán. We then embarked, and arrived at Astrakhan in about forty-four days after leaving Kazán. We were stopped at the gates by the guard; after examining our passport, they let us pass; they were dressed like your people, except that their clothes were black (meaning dark-green). We staid one month with a Nogai there, as it was winter, and the country difficult to travel, owing to the snow and ice. After this, we hired kibitkas, and in twenty days arrived at a town where the Sultan of the Nogais resides. We cannot correctly recollect the name of the place, but it was something like Evel. Three days journey from thence, we met with a river or branch of the sea, where was a Russian fort, with a small detachment of military; our passport was again looked at. We then crossed over and came to a desert of one day's journey in the carriages aforesaid; after which, we reached a village of the Cherkes (Circassians): they gave us a guide who brought us to a Muhammedan village, whence we went with a caravan to Hunufa (Hanapa). We had now entered the Roman (Turkish) territories. After a stay of ten days at that place, we took ship, and arrived safely at Rúm (Constantinople); here we hired a house for three or four rupces per month, staid in that city four months, and passed over in a boat to Eskudari. We here purchased horses, and proceeded on horseback through many villages and towns until after forty or fifty days, we arrived at Shám (Damascus). We hired a house in this city, where we staid some time. We wished to visit Jerusalem, but the country was in such a disturbed state, that we could not go for fear of the plundering Arabs. We then travelled to a town called Ghaza, and thence to Elarish, whence we went in twenty-five days to Cairo, the capital of Egypt; here we hired a house and remained three months. We then left for Sucz, which port we reached on camels in four days; here we embarked on board a vessel, and arrived at Judda in seventeen days. We put on the dress of pilgrims on board ship four days before we arrived at Judda. We reached Mecca in two days on camels; arrived there in the month of Ramzán. We hired a house there at four dollars

* The Volga.

per mensem, and after the pilgrimage was performed, we went with a caravan to Medina, where we arrived in twelve days. From Medina we came to Yambo, a sea-port; thence we took ship to Cossier, thence in four days we reached Kenneh; we then dropped down the Nile to Cairo, whence we went to Alexandria; there we took ship, and sailed to a place called Adania; we thence journeyed to a town called Katalia, thence to Bursa, then to another town called Adania, Scutari, and Rúm. At Constantinople we were directed by the Scutan's minister to apply to the Russian ambassador for another passport. We took ship and arrived at Taridska*. Here we saw a large Russian fort. Thence we came to Astrakhan, from which place we proceeded round the head of the Caspian to the city of Orenbourg; thence we went to a place called Kezziljer, the last town in the Russian territories. About twelve or thirteen days after passing through the hordes of wandering Kuzzáks, we crossed the Kúk-Sú river, and happily re-entered our prince's territory. On both sides this river are hordes of roving Kuzzáks; those to the north are under Russia, to the south under our king. The river is very broad, and at times very full of water; its current is very strong. We arrived after thirty days on camels at Sozák; hence we bent our steps to Turkistan, Tashkend, and Kokan. When we arrived, the KHÁN, our king, had just returned from his campaign in Chinese Tartary; whither he had gone to assist JEHANGÍR KHOJA WANG. JEHANGÍR KHOJA was no rebel, as treated by the Chinese. His ancestors were the sovereigns of the country before the Chinese conquered it, that is of Kashgar. Our prince in some degree failed in his expedition against the Chinese; this was owing to JEHANGÍR KHOJA's not joining him cordially. Our prince could not infuse confidence into his mind, and JEHANGÍR wanted to conquer the country for himself. The consequence of that campaign, however, was that the Chinese agreed to our king's supremacy over their Muhammedan subjects; on the other hand, he is to keep the country in order, and be responsible for the Kirghiz and Muhammedan population. After our return, our father waited on the SHEKH-UL ISLAM, who paid him great attention, as did all the ulema, and people in general; but his other four sons died, on which he set out with us and our mother on a second pilgrimage, both our parents being determined to leave their bones in the holy land. Our good father however died at Somniány. In the first instance our 400 tilas (gold pieces) carried us to Mecca. After all our expenditure there, we had one hundred† left, and on this we subsisted on our way back. We were seven years in performing our first pilgrimage, and returning to our own country. We had no anxiety about being short in cash, as we knew

* Taganrog?

† Rupees 800.

we had God for our protector, and that he would bring us through all adversities, according to his holy and immutable decrees.

The two young men, from whom I gleaned the above particulars, came to Bombay in the suite of the *vazir* of Kokan; their names were HAJÍ SHAH KU'LÍ and HAJÍ SHAH KALENDER; they were very young when they performed the pilgrimage, being now only about thirty and twenty-six years of age respectively. They have received a very good education, having a good acquaintance with the principal Persian authors, and are well versed in Muhammedan science; their father was a Mulla or Doctor of Law, and received his education partly at Kokan, and partly at Bokhara; he also travelled to Kabul to become initiated in Súfeism by a famous nakshbandy pír or seer of that place.

III.—*European Speculations on Buddhism.* By B. H. HODGSON, Esq.
C. S. Resident at Nipal, &c.

In the late M. ABEL REMUSAT'S review of my sketch of Buddhism, (*Journal des Savans*, Mai, 1831,) with the perusal of which I have just been favoured by Mr. J. PRINSEP, there occurs (p. 263) the following passage: "L'une des croyances les plus importantes, et celle sur la quelle l'essai de M. HODGSON fournit le moins de lumières, est celle des avénemens ou incarnations (*avatúra*). Le nom de *Tathágata* (avenu*) qu'on donne à SAKIA n'est point expliqué dans son mémoire; et quant aux incarnations, le religieux dont les reponses ont fourni la substance de ce mémoire, ne semble pas. en reconnoître d'autres que celles des sept Bouddhas. Il est pourtant certain qu'on en compte une infinité d'autres; et les lamas du Tibet se considèrent eux mêmes comme autant de divinités incarnées pour le salut des hommes."

I confess I am somewhat surprised by these observations, since whatever degree of useful information relative to Buddhism my essays in the *Calcutta* and *London Transactions* may furnish, they profess *not* to give *any*, (save *ex vi necessitatis*) concerning the 'veritable nonsense' of the system. And in what light, I pray you, is sober sense to regard "une infinité" of phantoms, challenging belief in their historical existence as the founders and propagators of a given code of laws? The *Lallita Vistara* gravely assigns 505, or according to another copy, 550, *avatárs* to SAKYA alone. Was I seriously to incline to the task of collecting and recording all that is attributed to these palpable *nonentities*? or, was it merely desired that I should explain the rationale of the doctrine of incarnation? If the latter only be the desideratum, here is a summary recapitulation of what I thought I had already sufficiently explained.

* A radical mistake; see the sequel.

The scale of Bauddha perfectibility has countless degrees, several of which towards the summit express attributes really divine, however short of the transcendental glory of a *tathágata* in *nirvritti*. Nevertheless, these attributes appertain to persons subject to mortal births and deaths, of which the series is as little limited as is that scale of cumulative merits to which it expressly refers. But, if the scale of increasing merits, with proportionate powers in the occupiers of each grade, have almost infinite extent, and yet mortal birth cleave to every grade but the very highest, what wonder that men-gods should be common? or, that the appearance again in the flesh, of beings, who are far more largely gifted than the greatest of the *devatas*, should be called an *avatár*? Such *avatárs*, in all their successive mortal advents till they can reach the estate of a *tathágata*, are the *arhantas*, and the *bodhisatwas*, the *pratyéka* and the *srávaka-Buddhas*. They are gods and far more than gods; yet they were originally, and still quoad birth and death are, mere men. When I stated that the divine Lamas of Tibet are, in fact, *arhantas*; but that a very gross superstition had wrested the just notion of the character of the latter to its own use, I thought I had enabled every reader to form a clear idea of that marvel of human folly, the immortal mortals, or present palpable divinities of Tibet! How few and easy the steps from a theory of human perfectibility, with an apparently interminable metempsychosis, to a practical tenet such as the Tibetans hold!

But REMUSAT speaks of the incarnations of the *tathágatas*: this is a mistake, and a radical one. A *tathágata* may be such whilst yet lingering in the flesh of that mortal birth in which he reached this supreme grade;—and here, by the way, is another very obvious foundation for the Tibetan extravagance—but when once, by that body's decay, the *tathágata* has passed into *nirvritti*, he can never be again incarnated. The only true and proper *Buddha* is the *Maha Yánika* or *Tathágata Buddha*. Such are all the '*sapta Buddha*;' of whom it is abundantly certain that *not one* ever was, or by the principles of the creed, could be, incarnated. SAKYA's incarnations all belong to the period preceding his becoming a *Tathágata*. Absolute quietism is the enduring state of a *Tathágata*: and, had it been otherwise, Buddhism would have been justly chargeable with a more stupendous absurdity than that from which REMUSAT in vain essays to clear it. '*Plusieurs absolus—plusieurs infinis*' there are; and they are bad enough, though the absolute infinity be restricted to the fruition of the subject. But the case would have been tenfold worse had activity been ascribed to these beings; for we should then have had an unlimited number of infinite ruling providences! The infinite of the Buddhists is *never* incarnated; nor the finite

of the Brahmans. *Avatárs* are an essential and consistent part of Brahmanism—an unessential and inconsistent part of Buddhism: and there is always this material difference between the *avatár* of the former and of the latter, that whereas in the one it is an incarnation of the supreme and infinite spirit, for recognised purposes of creation or rule; in the other, it is an incarnation of a mere human spirit—(however approximated by its own efforts to the infinite) and for what purpose it is impossible to say, *consistently with the principles of the creed*. I exclude here all consideration of the *dhyáni*, or celestial Buddhas, because REMUSAT's reference is expressly to the seven *mánushi* or human ones.

The word *tathágata* is reduced to its elements, and explained in three ways—1st, *thus gone*, which means gone in such a manner that he (the *tathágata*) will never appear again; births having been closed by the attainment of perfection. 2nd, *thus got or obtained*, which is to say, (cessation of births) obtained, degree by degree, in the manner described in the Bauddha scriptures, and by observance of the precepts therein laid down. 3rd, *thus gone*, that is, gone as it (birth) came—the pyrrhonic interpretation of those who hold that doubt is the end, as well as beginning, of wisdom; and that *that* which causes birth, causes likewise the ultimate cessation of them, whether that 'final close' be conscious immortality or virtual nothingness. Thus the epithet *tathágata*, so far from meaning 'come' (*avenu*), and implying incarnation, as REMUSAT supposed, signifies the direct contrary, or 'gone for ever,' and expressly announces the *impossibility* of incarnation; and this according to all the schools, sceptical, theistic, and atheistic.

I shall not, I suppose, be again asked for the incarnations of the *tathágatas**. Nor, I fancy, will any philosophical peruser of the above etymology of this important word have much hesitation in refusing, on this ground alone, any portion of his serious attention to the 'infinite' of Buddhist *avatárs*, such as they really are. To my mind they belong to the very same category of mythological shadows with the infinity of *distinct Buddhas*, which latter, when I first disclosed it as a fact in relation to the belief of these sectaries, led me to warn my readers "to keep a steady eye upon the authoritative assertion of the old scriptures, that SAKYA is the 7th and last of the *Buddhas*†."

The purpose of my two essays on Buddhism was to seize and render intelligible the *leading* and *least* absurd of the opinions and practices of these religionists, in order to facilitate to my countrymen the study of

* To the question, what is the *tathágata*, the most holy of Buddhist scriptures returneth for answer, 'It does not come again, it does not come again.'

† Asiatic Researches, vol. xvi. p. 445.

an entirely new and difficult subject in those original Sanscrit authorities* which I had discovered and placed within their reach, but no living interpreters of which, I knew, were accessible to them, in Bengal or in Europe.

I had no purpose, nor have I, to meddle with the interminable sheer absurdities of the Bauddha philosophy or religion; and, had I not been called upon for *proofs* of the numerous novel statements my two essays contained, I should not probably have recurred at all to the topic. But sensible of the prevalent literary scepticism of our day and race, I have answered that call, and furnished to the Royal Asiatic Society, a copious selection from those original works which I had some years previously discovered the existence of in Nipal. I trust that a further consideration of my two published essays, as illustrated by the new paper just mentioned, will suffice to remove from the minds of my continental readers most of those doubts of REMUSAT, the solution of which does not necessarily imply conversancy on my part with *details as absurd as interminable*. I cannot, however, be answerable for the mistakes of my commentators. One signal one, on the part of the lamented author in question, I have just discussed: others of importance I have adverted to elsewhere: and I shall here confine myself to the mention of one more belonging to the review from which I have quoted. In speaking of the classification of the people, REMUSAT considers the *vajra acharya* to be laics; which is so far from being true that they and they alone constitute the clergy. The *bhikshuka* can indeed perform some of the lower offices of religion: but the *vajra acharya* solely are competent to the discharge of the higher; and, in point of fact, are the only real clergy. That the distinction of *clerus et laicus* in this creed is altogether an anomaly, resulting from the decay of the primitive asceticism of the sect, I have endeavoured to shew elsewhere, and cannot afford room for repetition in this place.

The critics generally have been, I observe, prompt to adopt my caution relative to local superstitions, as opposed to the original creed of the Bauddhas. But they have carried their caution too far, and by so doing, have cast a shade of doubt and suspicion over things sufficiently entitled to exemption therefrom. Allow me, then, to reverse the medal,

* Nearly 50 vols. in Sanscrit, and four times as many in the language of Tibet, were sent by me to Calcutta between the years 1824, and 30. The former had never been before heard of, nor the latter possessed, by Europeans.

[See the notices of the contents of the Tibetan works and their Sanscrit originals by M. CSOMA DE KÖRÖS, and by Professor H. H. WILSON in the 3rd vol. *Gleanings*, and 1st vol. *Journal As. Soc.*—ED.]

and to shew the grounds upon which a great degree of certainty and uniformity may always be presumed to exist in reference to this creed, be it professed where it may.

Buddhism arose in an age and country celebrated for literature ; and the consequence was, that its doctrine and discipline were fixed by means of one of the most perfect languages in the world (Sanskrit), during, or immediately after, the age of its founder.

Nor, though furious bigots dispersed the sect, and attempted to destroy its records, did they succeed in the latter attempt. The refugees found, not only safety, but protection, and honour, in the *immediately* adjacent countries, whither they safely conveyed most of their books, and where those books still exist, either in the original Sanscrit, or in most carefully-made translations from it. The *Sata Sahasrika*, *Prajna Paramita*, and the nine *Dharmas*, discovered by me in Nipal, are as indisputably original evidence of Buddhism as the *Védas* and *Puránas* are of Brahmanism. The *Káhygur* of Tibet has been *proved* to have been rendered into Tibetan from Sanscrit, with pains and fidelity : and if the numerous books of the Burmese and Ceylonese be not originals, it is certain that they were translated in the earlier ages of Buddhism, and that they were rendered into a language (high Prakrit) which, from its close affinity to that of the original books of the sect, (Sanskrit,) must have afforded the translators every facility in the prosecution of their labours.

But if the Buddhists, whether of the continent or islands of India, or of the countries beyond the former, still possess and consult the primitive *scriptures* of their faith, *either in the original language, or in careful translations, made in the best age of their church*—wherefore, I would fain know, should European scholars, from their study, incessantly prate about mere *local* rites and opinions, constituting the substance of whatever is told to the intelligent traveller by the present professors of this faith in diverse regions—nay, constituting the substance of whatever he can glean from their books ? In regard to Nipal, it is just as absurd to insinuate, that the *Prajna Paramita*, and the nine *Dharmas* were composed in that country, and have exclusive reference to it, as to say that the Hebrew Old, or Græck New, Testament was composed in and for Italy, France, or Spain exclusively. Nor is it much less absurd to affirm, that the Buddhism of one country is *essentially* unlike the Buddhism of any and every other country professing it, than it would be to allege the same of Christianity.

Questionless, in the general case, documentary is superior to verbal evidence. But the superiority is not without limit : and where, on the one hand, the books referred to by our closet students are numerous and difficult, and respect an entirely new subject, whilst, on the other

hand, our personal inquirers have time and opportunity at command, and can question and cross-question intelligent witnesses, the result of an appeal to the living oracles will oft times prove as valuable as that of one to the dead.

Let the closet student, then, give reasonable faith to the traveller, even upon this subject; and, whatever may be the general intellectual inferiority of the orientals of our day, or the plastic facility of change peculiar to every form of polytheism, let him not suppose that the living followers of Buddha *cannot* be profitably interrogated touching the creed they live and die in; and, above all, let him not presume that a religion fixed, at its earliest period, by means of a noble written language, has no identity of character in the several countries where it is now professed, notwithstanding that that identity has been guarded, up to this day, by the possession and use of original scriptures, or of faithful translations from them, which were made in the best age of this church.

For myself, and with reference to the latter point, I can safely say that my comparisons of the *existing* Buddhism of Nipal, with that of Tibet, the Iudo-Chinese nations, and Ceylon, as reported by our local inquirers, as well as with that of *ancient* India itself, as evidenced by the sculptures of Gya*, and of the cave temples of Aurungabad, have satisfied me that this faith possesses as much identity of character in all times and places as any other we know, of equal antiquity and diffusion†.

* See the explanation of these sculptures by a Nipalese Buddhist in the Quarterly Oriental Magazine, No. XIV. pp. 218, 222.

† As a proof of the close agreement of the Baudtha systems of different countries, we may take this opportunity of quoting a private letter from Colonel BURNEY, relative to the 'Burmese Philosopher Prince,' MEKKHARA MEN, the king of Ava's uncle.

"The prince has been reading with the greatest interest M. CSOMA DE KÖRÖS's different translations from the Tibet scriptures in your Journal, and he is most anxious to obtain the loan of some of the many Tihetan works, which the Society is said to possess. He considers many of the Tihetan letters to be the same as the Burmese, particularly the *b*, *m*, *n*, and *y*. He is particularly anxious to know if the monastery called Zedawuna still exists in Tihet, where according to the Burmese books, GODAMA dwelt a long time, and with his attendant ANANDA planted a hough which he had brought from the great *pīpal* tree, at Buddha-Gaya. The prince is also anxious to know whether the people of Tihet wear their hair as the Burmese do? how they dress, and how their priests dress and live? The city in which the monastery of Zedawuna stood, is called in the Burmese scriptures *Thawotthi*, and the prince ingeniously fancies, that Tibet must be derived from that word. The Burmese have no *s*, and always use their soft *th*, when they meet with that letter in *Pali* or foreign words—hence probably *Thawotthi* is from some Sanscrit name Sawot. I enclose a list of countries and cities mentioned in the

P. S.—Whether REMUSAT's 'avenu' be understood loosely, as meaning come, or strictly, as signifying come to pass, it will be equally inadmissible as the interpretation of the word *Tathágata*; because *Tathágata* is designed expressly to announce that all reiteration and contingency whatever is barred with respect to the beings so designated. They cannot come; nor can any thing come to pass affecting them*.

And if it be objected, that the mere use of the word *avenu*, in the past tense, does not necessarily imply such reiteration and conditional futurity, I answer that REMUSAT clearly meant it to convey these ideas, or what was the sense of calling on me for the successive incarnations of these *avenus*? It has been suggested to me that *absolu*, used substantively, implies activity. Perhaps so, in Parisian propriety of speech. But I use it merely as opposed to relative with reference to *mere* mortals; and I trust that the affirmation—there are many absolutes, many infinites, who are nevertheless inactive—may at least be distinctly understood. I have nothing to do with the reasonableness of the tenet so affirmed or stated, being only a reporter.

IV.—*Geological Section across the Valley of the Nerbudda, from Tendukhéri to Bittoul.* By J. G. SPILSBURY, Esq. Ben. Med. Est. Plate XXIII.

In your No. for November last, you expressed a wish that some one should give you a section of the geological features of the country from Tendukhéri to the hills south of the Nerbudda. Opportunity has been afforded me of making such a trip, and as probably you may not receive an account from one versed in the subject, I send you such notes as I made on the excursion, together with specimens of the rocks met with.

The conical hill to the S. E. near Tendukhéri is the point from which I started, the same to which Captain FRANKLIN alludes in the 1st part of the Transactions of the Physical Class of the Asiatic Society, and which he describes as being capped with basaltic columns.

The specimens from this hill are T 1, forming a platform with T 1 *a* mixed in detached pieces. Above the platform are trap boulders reaching Burmese writings, as the scene of GODAMA's adventures, to which if the exact site and present designation of each can be assigned from the Sanscrit or the Tibet authorities, it will confer an important favor on Burmese literati." It is highly interesting to see the spirit of inquiry stirring in the high places of this hitherto benighted nation. The information desired is already furnished, and as might be expected, the Burmese names prove to be copied through the *Prakrit* or *Pali*, directly from the Sanscrit originals, in this respect differing from the Tibetan, which are *translations* of the same name.—ED.

* *Avenu* signifies *quod evenit, contigit*, that which hath happened.—(*Dictionnaire de Trevoux*.) *Tathágata*; *tathá* thus (what really is), *gata* (known, obtained).—(WILSON'S Sans. Dict.)—ED.

to within some 50 or 60 feet of the summit where the columns T 2 are found. On coming to which, one would almost fancy that some vast temple had been thrown down by an earthquake. At the very top T 3 was lying—(see Pl. XXIII. fig. 1.)

From this hill to Beltari Ghát, on the Nerbudda, is a distance of about 10 miles, the first part of the road much intersected by ravines of the Baranj, a considerable nalá rising in the hills north of Tendukhéri; after which is the black alluvial soil of the valley, until you approach the Nerbudda. About a mile to the east of Beltari, in a water-course of one of the ravines I obtained the accompanying fossil remains*, the matrix of which is (S C Bel) a conglomerate, very similar to the one forwarded with the fossils from Segouni, on the Omar nadí near Umaria. This conglomerate forms also the bed of the river at this Ghat (Bel. 1.) but is so friable and little coherent that it is difficult to procure a specimen; it is also accompanied by the same nodules, (vide Bel. 2.)

On crossing the Nerbudda, about a mile inland, in a south-east direction, a low detached range of hills, some four or five miles in extent, rising to the highest perhaps 200 feet, is met with B H 1; first occurring at the bottom of a ravine distant some 2 or 300 yards from the range: the strata running nearly east and west, with veins of quartz (B H 2) traversing in the same direction, varying from a line to upwards of two inches breadth. Near is seen the same conglomerate (S C Bel.) of the opposite side of the river, and which appears to me to be spread over a considerable extent of country, if it be the same as mentioned by Captain FRANKLIN, as occurring at Janee Ghat. I have found it in several places along the course of the Nerbudda, as far as Hoshungabad, and one specimen I picked up in the bed of the Duhi, near Gurawára proper.

From this low range to Futtehpoor, the country presents no particular feature for the geologist. Near all the rivers, and nalás, ravines abound: generally a light soil mixed with kankar, on which is grown† cotton, kodo, urhur, juwár, and rain crops. At a greater or less distance from the ravines, the rich black soil of the valley prevails, fitted for gram, wheat, and rubee crops in general.

As from this point I proceeded to visit one of the hot-springs, I shall here insert my remarks on the westernmost of them.

It is situated some 14 miles, in a westerly direction from Futtehpoor, about four miles in a S. S. E. one from the village of Kyrie, belonging to Lala Thakur. A short distance before reaching the spring,

* The upper jaw of a horse.—ED.

† My observation does not accord with that of Lieut. MILES', (p. 65 of your Journal.) Great quantities are grown on the banks of the Heren and Nerbudda, but in soil as described above.

in crossing a small *nalá* (chiefly derived from these springs), the bed was formed by the specimens K 1, 2, and 3; No. 1 formed a small fall (see fig. 2,) and No. 2, intersected the strata running in a E. N. E. direction. No. 3 being the general bed of the river, and giving it a greyish appearance.

There are two springs, distant some five or six paces from each other, the southern one has been squared by stones being placed tank fashion, forming an area of about five feet each way: the other is left pretty much to nature; depth about a foot and half. Much gas is extricated, of an offensive sulphureous odour, temperature 114° ; that of the air 86° , time noon, (28th February, 1833.) At 12 paces distant, is a cold spring; the temperature of which I found to be 82° . Of the specimens accompanying, K 4 is the rock from which the springs issue; a pace or two above, K 5 juts out; K 7, is a rocky ledge just below the junction of the hot and cold springs; K 6, is a small detached hill, large masses of which are lying at the junction of the springs, on which are carved the *yoni*. In a water-course between the hill K 6, and the springs, lie large rolled pebbles of different colors, jasper, agate, and boulders of all sizes, precisely similar to those at Futtehpoor (F. 1.)

Futtehpoor (at which reside three Goand Rajas) is situated first within the gorge of the low range of hills that form the southern boundary of the valley of the Nerbudda. On passing through the town, which is built on both sides of the Unjon nála, the road winds through the low* hills, varying from 150 to 200 feet in height, composed of F 2, capped with F 3. F 2 descends all the way, and is seen forming the bed of the nála; at one place where they crossed it, the rock puts on the appearance of a platform, covered with rough mortar, in which numerous small siliceous pebbles were mixed. In the nála and all about, are boulders of F 1, as at Kyrie hot spring. About six miles round the western end of Chuttair, the road up to this being undulated low jungle, the country becomes more open, and the soil changes from siliceous to decomposed trap, small hillocks and ridges of which are seen jutting up in this valley. The intermediate spaces, being the black alluvial soil similar to that of the Nerbudda, had crops of gram and wheat on them. About four miles from Maljihir S. S. E. near a small low range of hills (specimen M H) is the other hot-spring. The gas extricated is more offensive than the Kyrie one; temp. 134° air 92° ; time 2 P. M. (3rd March, 1834,) cold spring about 20 paces off, 78° . This spring bubbles

* It is to be noted that although the hills are generally low, yet some high peaks, as Chuttair and Douria, (probably rising to 800 or 1000 feet above the plain,) are met with.

up much more than the other, and a greater volume of water issues. It has also been rudely enclosed, and at a short distance off is a Mahadeo temple in ruins. M S is the rock from which the spring issues, and M N is a ledge of rocks, and G the nála, some 200 yards off.

From Maljihir westward to Kunchari, a ridge of trap is traced, which crosses the river Deinwa at this place, and through which the river has cut its way; changed into the solid compact rock of D at K 1; a similar ledge being seen above the ford: the strata appear to run nearly east and west, with a dip of about 30° , in places traversed by thin veins of quartz and agate. D at K 3, forms the bed of the river at the ford, while large rolled conglomerates D at K 2, are thickly strewn in the bed, varying in size from a small pebble to large masses, a foot in diameter.

From this to Pugara is about nine miles. After leaving the Deinwa, the road is sandy, and a small ridge of sandstone is passed over, leading into a valley of black alluvial soil, up to the village of Singanama; from which commences what may be termed the Mahadeo Hills. The road is one unvaried ascent, but by no means steep, through a forest jungle, (scarcely any low bush jungle,) the rock of which is a sandstone, P 1, (and P 2, much intermixed with it,) the whole very practicable for all sorts of baggage, carts excepted. About seven miles from the river, the chief ascent in this march is attained, and the road keeps along the west of the ridge, which becomes more open and level up to Pugara, a small Goand village, belonging to a Thakur. The scenery about is very picturesque: a small nála, the Kanjuudeo, is in front, and on every side fine large trees of mango, jamin, mahwa, semul, &c.; less than a mile to the eastward rises a small stream, the Kanjun Koonr, which after a very small course falls over a precipitous rock, some 3 or 400 feet perpendicular; it has obtained the name of *Butkee Boorán*. Tradition saying that it derived its name from a young Goandee (it might add to the romance to style her lovely, but judging from the faces of this race in our days, it could not be the truth,) being forced over; however Miss Butkee has had her companions, as in the days of Goand rule, obnoxious individuals on being brought before their ruler, had the laconic sentence of "Shew him Butkee Boorán," passed on him. This nála, after winding through the hills, falls into the Deinwa at Pissun.

From Pugara to the table land of Puchmuree, the distance is about seven miles, the road being a series of rocky sandstone ledges, occasionally intersected by small streams; the road on the whole is very practicable for all sorts of laden cattle, there being but one or two places where even camels experience any thing like difficulty. On passing the last elevation, one of the Kodri range (being *the husks of the kodo* thrown aside by Mahadeo when resident here), you come to an open, rather level plain, of irregular size, the longest part probably not exceeding six miles

from Dobgur west to the Kanjee Ghatee, east, by five from the Pugara Ghatee to the cave at Mahadeo. There being no underwood or low jungle, this plain has much the appearance of a park; two or three streams wind through it in different directions.

The whole of these hills are almost entirely one rock, a sandstone (Dok 2) varying a little in color. I visited the top of one of the peaks, Dokgur* by name, the same which is stated by Captain FRANKLIN to be 4800 feet high. On the pinnacle of this hill the pebbles were lying, evidently detached from the sandstone by the action of weather. These pebbles are to be seen in horizontal strata in many places, where the bare mural rock rises 300 or 400 feet from the plain. The only exception to this sandstone was, Dok 1, forming a water-course about 200 feet below the summit, and which is crossed once or twice in ascending to this peak, and Dok 3, about 150 feet from the summit.

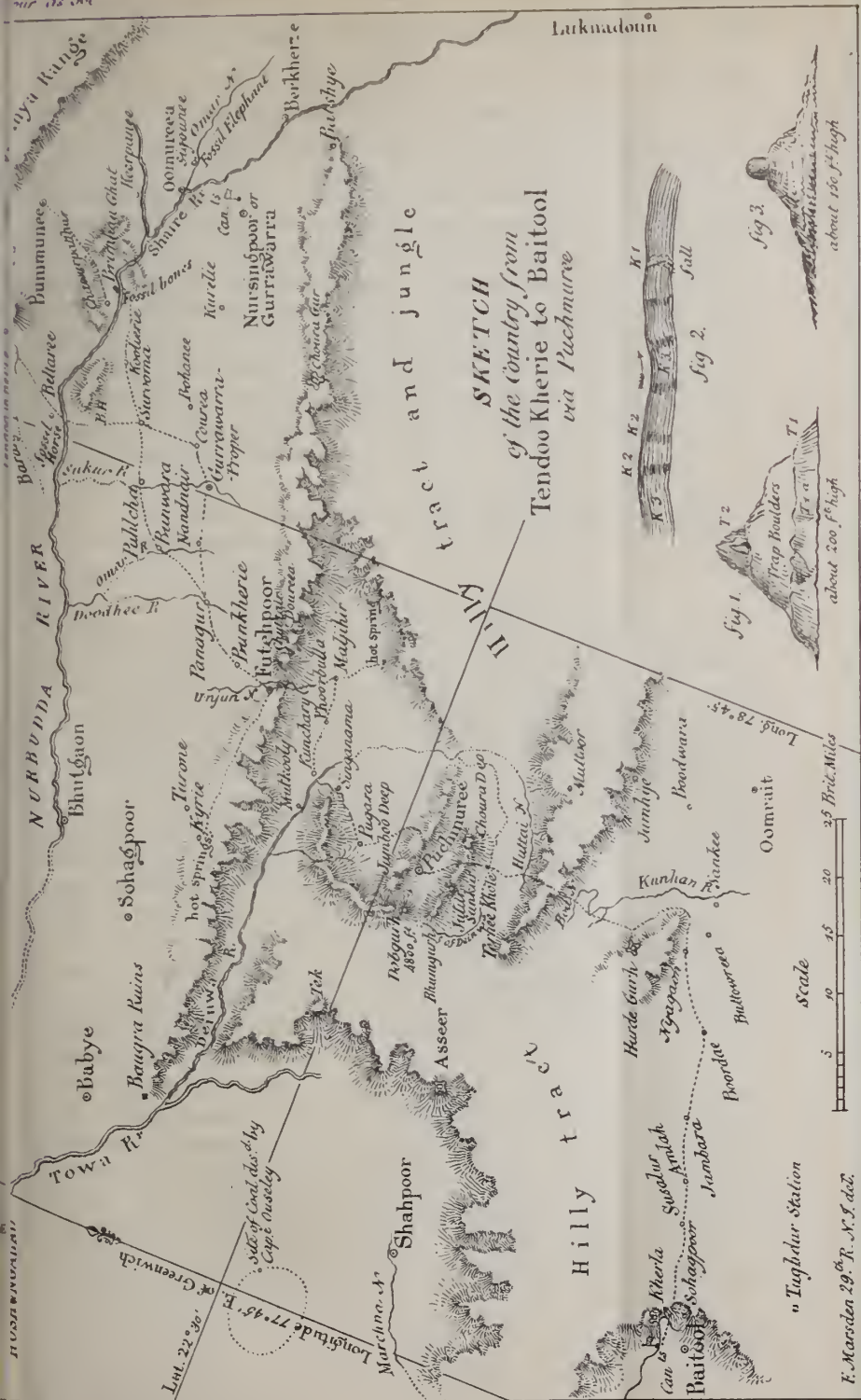
In a cave, through which passed a stream, called Jumbo Dwcep, the specimen of silicified tree was found by Captain OUSELEY, the description of which I give you in his own words.

"After having swam in as you know some 40 or 50 yards, with torches, where several passages appear to branch off, and not liking to go farther in water, the depth of which was great but unknown, I came back to the debris on which you stood, formed of broken masses from above, under which the stream runs. On descending with the stream by torch light about 20 feet through the sandstone excavated by the action of water, we came to a small room 10 feet square by 10 or 12 high, the stream falling by a crevice through the floor, about two feet wide. We descended about 15 or 20 feet more, and between the sides of the crevices was jammed the tree, a trunk with apparently stumps above, part of the bark, all fallen forward and caught in a hollow of the sandstone made by water: about 4 feet long by 18 inches wide, from 2 to 6 inches thick: of this I struck off the piece† I gave you, and have brought away the whole fragment, but not the tree, for what appeared was fully four feet wide, but how large it may be I did not carefully observe."

Lieutenant FINNIS, in the *Journal* for February last, p. 79, appears to me to give a greater degree of extent to these hills, than my observation warrants. More than three sides of them are defined by the Deinwa, taking its rise between the peaks of Bhimgur and Dokgur, and to the westward of Dokgur a deep chasm immediately commences. Whether the geological formation differs on the side towards the Tek, I have no

* There are two other peaks exceeding this in height, viz. Putta Sunkur, (above the cave of Mahadeo,) and Choura Deo, the highest of all which I conjecture to be about 5000 feet above the sea.

† The one I send.



opportunity of judging, but the Muttoor, divided from the Mahadeo range by the Deinwa and Kuttai nálas, is trap, and that formation is seen from Maljihir to Singanama, at which village the gradual ascent of these hills from the north commences. The steep side is from Bhawun (where the Jatra assembles at the annual festival of Shiv Ratri): the ascent from this to the cave of Mahadeo (situated some 4 or 500 feet below the peak of Jutta Shunkur) is impassable for laden cattle, horses and elephants with difficulty getting up. Near Bhawun is to be seen a singular shaped hill (see fig. 3), from which all Goands firmly believe the locusts issue, hence its name Terí Kothí. Of the climate of these hills I annex a memorandum, received from Captain FRANKLIN in 1828:—a season unusually hot on the Nerbudda and in the provinces, the thermometer in that month being at Cawnpore 118° in the shade, and 144° Fahr. in the sun.

May 21. Puchmuree,	Noon.	Barom.	26.50	Therm.	86.	Fine
Peak of Dokgur,	5 P. M.	Ditto	25.60	Ditto,	85.	Do.
22. Puchuree,	8 A. M.	Ditto	26.50	Ditto,	78.	cloudy.
33. Jhirpa, close to Kunchuree on the Deinwa,	5 P. M.	Ditto	28.35	Ditto,	98.	

being at least 20° cooler than the valley at the hottest period of the day. Is it further confirmation of the coolness of these hills, that ferns and moss are to be seen very luxuriant from Pugara upwards? as I am not aware that we found them lower down. The animals are the same as on the plains, with exception of a beautiful squirrel, described by Major SYKES in his account of the mammalia* of the Dukhun, and named by him "Sciurus Elphinstonii," his description accurately answering to a pair that Lieutenant WILLIAMS, 29th Native Infantry, and myself, procured. The Goands procure them in the mango season, a tree that pre-eminently flourishes wild in these hills; some trunks issuing from the crevice in the bare sandstone rock of three and even four feet diameter.

My route back was very much over the same ground, except that I examined the river much more to the eastward at Brimhan Ghat. The bed of the river is here formed of a conglomerate, (Br. Ghat,) in which probably the fossil lower jaw of the elephant which I forwarded to you formerly, was found†.

About a mile and a half up the river, the accompanying series of rocks were found from B K 1 to B K 2. Number 1 is first met with on the right bank, a slaty rock, with a dip of about 10° from the vertical, stretching in a north-east direction; next comes No. 2, in the same direction, changing into 3†, with No. 4 intermixed. Close to the water's

* Vol. i. Asiatic Journal, p. 165.

† See vol. ii. p. 583.

‡ Of this rock, great numbers of Yonis and Bulls are made, to adorn the temples in this vicinity.

edge, No. 5, the river here being narrowed by these rocks, forms a rapid ; Nos. 5 and 6, shelving down on each side. On the left bank, a rocky platform of considerable width rises from the water, at an angle of about 30° to the top of the bank, the strata running as before, consisting of Nos. 6, 7, 8, in places traversed by quartz 9 in contact with 8, 10 in large masses, 11 overlaying 10, some eight or ten inches thick ; after this to the top of the bank, 10 is seen traversed with much quartz varying from a line to considerable thickness.

About two miles, in a north-westerly direction, is the town of Chawur-puthur, with a low range of hills at the back of it ; the stratification of which is nearly vertical, (Ch. 1,) running in a north-east to south-west direction. I traced it down towards the river, where in a nála it changes to Ch. 2, and then into Ch. 3, forming a ledge of rocks that cross the river at Ram Ghat, and at this point terminate my observations.

N. B. In the construction of the accompanying map, those places written in capitals are laid down from a map of this agency, sent up from the Surveyor's General's Office, on a scale of eight miles to an inch, and this is just half the size. The Tek, a station of the G. T. S. is laid down at per As. Journ. for February last, p. 7, but not according to the map appended, which I know to be erroneous*. The six peaks and the Tek are all very conspicuous from the valley of the Nerbudda ; those two near Futtehpoor, named Chutair and Dourea, are nothing in height compared to the others, probably not so high by 2000 feet ; but close to the valley they look high. Choura overtops all, and is probably not less than 5000 feet above the sea.

Segouní near to Umuría, is the village close to which the fossil bones were discovered, as described in the As. Journ. for November, 1833.

List of Specimens alluded to in the above paper.

From the insulated hill near Tendukherí.

T 1	Silicio-calcareous conglomerate, tinged with lithomarge.	Bel. 2 nodule of kankar.
		<i>Low Hills South of the Nerbudda.</i>
T 1 a	More compact, silicious limestone.	B II 1 Silicious jasper conglomerate, with
T 2	Columnar basalt.	B II 2 Quartz veins.
T 3	Same as T 1.	<i>Khyrie Hot-springs.</i>
	<i>From Beltari.</i>	K 1 Calcareous basalt effervescing in
S C.	A pebble conglomerate with calcareous cement, same as that of	K 2 Vein of calcareous spar in do.
	Brimhan ghat.	K 3 Silicious limestone like T 1 a.
	Fossil upper jaw of a horse found	K 4 Stratified calcareous sandstone.
	imbedded in it.	K 5 Columnar basalt.

* On referring to the map in question, we find that our lithographist has made a mistake of *ten miles* in laying down the position of the Tek station, as compared with the table of Lats. and Longs. in page 70. The map was compiled from two sketch maps by different officers, which differed in scale and in the position of many of the principal places.—Ed.

K 6	Quartz sandstone.	Dok 3	White decomposing sandstones on summit, sandstone and large quartz pebbles.
K 7	Decomposing do. tinged green. <i>Futtehpoor Hills.</i>		<i>Mahadeo Cave, Soft sandstone.</i>
F 1	Conglomerate of jaspers, siliceous and felspar, with calcareous cement.		(Silicified wood in a stream within).
F 2	Jasper conglomerate, with red clay cement.		<i>Nerbudda west of Brimhán ghát.</i>
F 3	Quartz vein. * <i>Maljibir Hot-spring.</i>	B K 1, 2	Slate.
M H	Friable quartzose sandstone.	B K 3	More talcose do., green.
M N	More compact ditto.	B K 4	Still more compact, with calcareous veins.
M S	Ditto. <i>Deimea River at Kuncharee.</i>	B K 5	Quartz tinged with 4.
D K 1	Compact basalt.	B K 6	Ditto, and with red spots.
D K 3	Conglomerate of half-rounded pebbles, with jasper cement.	B K 7	Clayey sandstone, with rounded pebbles, size of a pear.
D K 2	Decomposed sandstone. <i>At Pugara.</i>	B K 8	Siliceous conglomerate.
P 1	Coarse-grained sandstone.	B K 9	Sandstone, with do.
P 2	Coarser do. with ochreous clay. <i>Dokgur Hills.</i>	B K 10	Ditto, with green earth.
Dok 1, 2	Basalt.	B K 11	Clayey sandstone, slaty. <i>At Chasourputhur.</i>
		Ch 1	Vertical columnar basalt.
		Ch 2	Do. black flinty.
		Ch 3	Lighter, more quartz.

Accompanying these specimens were the following found by Captain OUSELEY, at the site of the coal discovered by him marked on the map. As this coal was brought to the notice of the Asiatic Society by Lieut. FINNIS, in 1829, (sec p. 73, and by Captain COULTHARD before that time (see As. Res. xvii. 72,) it was not known to whom the discovery was rightly due. We are glad to see therefore that the subject is explained in the following note from Captain OUSELEY, to Dr. SPILSBURY, which accompanied the above geological notice.—ED.

“I am between Jamgurh and Bhoragurh: a beautiful jungle scene. I found the strata in a dry nála, thus:

From 10 to 4 feet from the surface.	.. soft sandstone, friable.
9 inches,	.. coal, slaty.
6 inches,	.. marly stone, black.
1½ feet,	.. good coal.
6 inches,	.. soft micaceous shale.
below to the depth of 25 feet,	.. harder sandstones.

The strata dip to the west about one foot in a yard: I was in hopes of finding it nearly horizontal. I have commenced two shafts, and expect to find the real deposit about five feet below the last coal. The only water is in a fissure of this nála, not good: all jungle and hills around. On referring to my journal, I find I sent specimens of this coal on the 9th March, 1827, to Mr. MADDOCK, Captain COULTHARD, &c. and that I sent two servants with Lieutenant FINNIS, a year after, to point out the place. It was upon WESTON's mentioning to Captain COULTHARD that bits of coal were found occasionally in the Towa, that I sent the man, who traced it up to this place.”

V.—*Note on the Fossil Bones of the Nerbudda valley, discovered by Dr. G. G. Spilsbury, near Narsinhpúr &c. By J. PRINSEP, Secretary, &c. (See Plate xxiv).*

[Read at the Meeting of the 6th August.]

The circumstances of the discovery of the gigantic fossil bones now presented by Doctor SPILSBURY, were brought to the notice of the Society on the 30th October last*. I should feel inclined in pointing to these splendid trophies, to repeat the obligations of Indian geology to this eminent cultivator of the science, but that his modesty will not allow me to designate him ‘geologist,’ although his zeal and enterprise in the systematic prosecution of geological inquiries, and his continued success in making known these treasures of the ancient world, treasures which had escaped so long the diligent search of professed geologists, have fairly won for him all the fame that the most enthusiastic disciple of the Wernerian hammer could covet.

Dr. SPILSBURY’s discoveries indeed forcibly exemplify the truth of the fable of “eyes and no eyes.” As it was his conversation with the lime-burner that first brought to light the existence of the *Jabalpúr* fossil shells, so was it an humble native carpenter at *Narsinhpúr* from whom he obtained the knowledge of the *giant* at *Segauntí*, which was followed up by an immediate visit to the spot, and the reaping of a rich harvest of discovery. Again, “on mentioning these fossil bones to the medical officer stationed at *Hoshangábád*,” says Dr. SPILSBURY, in a private note to myself, “he told me there were *plenty* just below his house, and that he would shew them to me: off we went, and I flatter myself I brought away what you will deem a real acquisition—the head of a horned animal (buffalo?) imbedded in the stone. Dr. IRVINE had considered them of too recent formation to be worthy of much notice, but I thought differently, and so I submit them to those who are more cognoscent on the subject: claiming for myself no more credit in the matter beyond a wish to contribute to this very interesting science such discoveries as mere accidents have thrown in my way.”

We should remember that the specimens, collected on these occasions, are not little hand samples, easily carried about, but bulky masses weighing from one to two maunds each; that they have to be conveyed 3 or 400 miles by land carriage over a difficult country before they can be embarked for another voyage of 600 miles to Calcutta. The care taken in packing them has however been so effectual, that I can safely say we see them now as they left the rocky conglomerate of the *Omar nadí* bank, from which they were detached nearly a year ago.

* See Journ. As. Soc. vol. ii. p. 586.

More than this,—I believe, from an inspection of CUVIER's plates, that the two femurs of the elephant now on the table are as perfect as, if not superior to, any of the sort in the celebrated museum of Paris.

I will now hazard a few observations on the remains of the *Narsinhpúr* or *Segauní* elephant.

It may be looked upon as most fortunate that the two bones of this animal, selected for dispatch, are the right and left femora, since it is principally upon the conformation of the condyles of the femur that CUVIER has decided the specific difference of the fossil or extinct, from the existing, varieties of the elephant.

I stated on the examination of the fossil jaw-bone of another elephant from the *Brimhán Ghát* near *Jabalpúr*, side by side with a recent jaw in our museum, that it was impossible to discover any such distinction as should constitute a difference of species*. But the case is very different now: the magnitude, as well as the peculiarities of structure, of the present animal, at once pronounce it to be the "mammoth," or *elephas primigenius* of BLUMENBACH. The head is not forthcoming to confirm this conjecture, having, according to the tradition of the village, been washed down the river seventy years ago: one tooth only was obtained from a Thákur in the neighbourhood, but that has not yet reached us:—Dr. Row (to whose care we are indebted for the dispatch of the specimens from Benares) writes, that he has sent it by another opportunity: however, the expressions and drawings of CUVIER accord so perfectly with the bone before us, that no reasonable doubt can be entertained even in the absence of the teeth. He thus describes its conformation:

"La tête inferieure du femur m'a fourni un caractère distinctif tres-sensible dans son *échancrure entre les deux condyles, qui se réduit à une ligne étroite*," (see figures 5 and 6,) "au lieu d'un large enfoncement qu'on voit dans les deux espèces vivantes," (see figures 2 and 8.)

The peculiarity was remarked in the Siberian mammoth, in the fossil elephant of Constadt, in that of Florence, and in all others, indeed, which were examined by this eminent naturalist; and here we find the same characteristic in another individual at this distant part of the globe. Doctor J. TYTLER has obligingly furnished me with the femur of a modern elephant, to render the comparison more obvious. (It is depicted as fig. 1 of the plate, in an exact relative proportion to the fossil bones.)

Doctor TYTLER's bone belongs to a young animal, if the detachment of the epiphysis be taken as a test of its age; but the same detachment is apparent in the round head of the left fossil femur also (fig. 9,) and in the condyles of another very large specimen, distinct from the other

two (figure 11); so that as far as regards age the fossil and recent bones are by no means unfit for a comparison of magnitude inter se. Judging from the plates of elephant skeletons, it appears that the height of the crown of the animal's skull from the ground is from $3\frac{1}{10}$, to $3\frac{1}{2}$ of the length of the femur; and the height to the top of the shoulder is $2\frac{1}{2}$ of this length; the latter is, I believe, the mode of estimating the height of the elephant.

The recent femur, measuring 40 inches exactly, would thus give an animal of nine feet high, which is by no means a small elephant in the present day; while the ratios between several measurements of the fossil and recent bone are as follows:

The length of the femur itself was fortunately taken by Dr. SPILSBURY, while it remained whole, and attached to the rocky matrix; otherwise the length deduced from the measurement of its parts alone would have needed some confirmation to obtain implicit credence.

	<i>Fossil Specimen from the Omar Nadi.</i>	<i>Skeleton of an elephant of 9 feet.</i>	<i>Ratio.</i>
Greatest length of the femur, between extremities,	63 inches.	40 inches.	1.6
Circumference of the ball <i>a b</i> ,	27	16.5	1.6
Diameter of ditto (<i>measured</i> .)	8.75	5.15	1.7
Breadth from tip of trochanter to exterior of ball, <i>a c</i> ,	18	11	1.6
Circumference of the central or smallest cylinder of the bone,	19	11	1.7
Breadth of the condyles, ..	11	6.8	1.6

Mean ratio of the fossil to the existing species, 1.63

There is a very satisfactory agreement between all these measurements, and we may be warranted therefore in fixing as the height of our fossil animal 9×1.63 , or $14\frac{1}{4}$ feet: 15 feet was the estimate at first made from the proportion of the bones in CUVIER's work.

Thus, a femur of an African elephant 1.11 metre, or 43.7 inches long, denoted an animal of $9\frac{1}{4}$ feet: and

The longest of the entire fossil bones accurately measured by CAMPER was 52 Rhcnish inches, = 53.9, indicating a height of 12 feet 2 inches.

“ Si l'on pouvoit se fier aux mesures rapportées dans la *gigantomachie*, le femur du prétendu Tentobochus auroit été encore plus grand, puisqu'il auroit eu *cinq pieds* de long; et néanmoins cette dimension n'indiqueroit qu'un individu de quatorze pieds du haut: ce qui ne surpasse point ce que les relations nous disent des éléphants vivans dans les Indes.” It is evident from this passage, that no entire specimen of the magnitude of our fossil had been seen at Paris. There was in the

museum, however, the head of a femur from the Pyrénées measuring 8.6 inches in diameter, indicating an individual of 14 feet 8 inches according to CUVIER: a *tête inferieure* from the *Bog* belonging to an animal of 15 feet: and another from Montserrat of the same dimensions.

All of these support the measurement we have assumed of about 15 feet for our specimen, and prove it to be certainly one of the most complete, as well as one of the largest remains of this magnificent quadruped of which even the museums of Europe can boast.

None of the animal matter of these bones remains: it is replaced entirely by carbonate of lime, not by silex as was the case with the specimen of imbedded bone from *Brimhan Ghát*. In the hollow interior of the femur, long interwoven and pendent stalactites of calcareous matter have been deposited, which shew that the bone must have been incased in the rock in nearly a perpendicular position; it is also remarkable that there are two series of these fibrous stalactites forming a considerable angle with one another, as if the position of the mass had been at one period altered. Towards the ends of the bones the cavity is entirely filled with the calcareous deposit.

Plate XXIV. represents different views of the two fossil femora in their relative proportion to the modern bone.

References to the Plate.

Fig. 1. Modern femur of a young elephant of 9 feet high.

Fig. 2. View of the lower end of ditto, to shew the separation between the condyles.

Fig. 3. Head of the left femur of the fossil species, broken off towards the shaft, but originally found united with

Fig. 4. The lower extremity of the same bone.

Fig. 5. Is a portion of the shaft of the same bone at the narrowest part: the stalactitic formation in the interior is partially visible at the lower extremity.

Fig. 6. End view of fig. 4, to shew the conformation of the condyles *united*, or *meeting*, as described in CUVIER'S *Ossements Fossiles*.

Figs. 7, 8. are from CUVIER'S Plate in *Oss. Foss.* vol. i. to shew their accordance with the above. 7, the fossil; and 8, the existing, species.

Figs. 9, and 10, are the same fragments of the right fossil femur, viewed on the inside. They are in as perfect a state as the left femur, excepting that the epiphysis of the ball of the thigh is detached and lost. Its place is shewn by a dotted line.

Fig. 12. Is a petrified bone of still larger dimensions than the preceding, but not so well preserved. It seems from the curved depression at *h'*, and the rudiments of condyles at *f'*, *g'*, to be the lower end of a femur. This fragment weighs $1\frac{1}{2}$ *mans*, and it is nearly one-fourth larger than *figs.* 4 and 10; *figs.* 12, 13.

Fossil buffalo.

With regard to the fossil skull, supposed by Dr. SPILSBURY to be that of a buffalo, from *Hoshangábád*, the same good fortune has in this instance also attended his discovery: for as the condyles of the

femur were chosen by CUVIER for one of the distinguishing types of the fossil elephant, so it happens that the forehead and skull, with or without the horns, are the only parts upon which reliance can be placed for determining the specific character of the ruminantia.

The present specimen is, with exception of the horns, as perfect as could be desired; the expanse of the forehead has its bony surface uninjured, shewing the suture along the middle, (which is a sign that the animal was not aged) and the attachment and bony process of the left horn. On the under side, the condyles of the occiput protrude through the stony mass; and by carefully chiselling away some of the stone, the position and form of the teeth on either side of the jaw have been exposed to view. All the interior of the skull is filled with the hard calcareous sandstone.

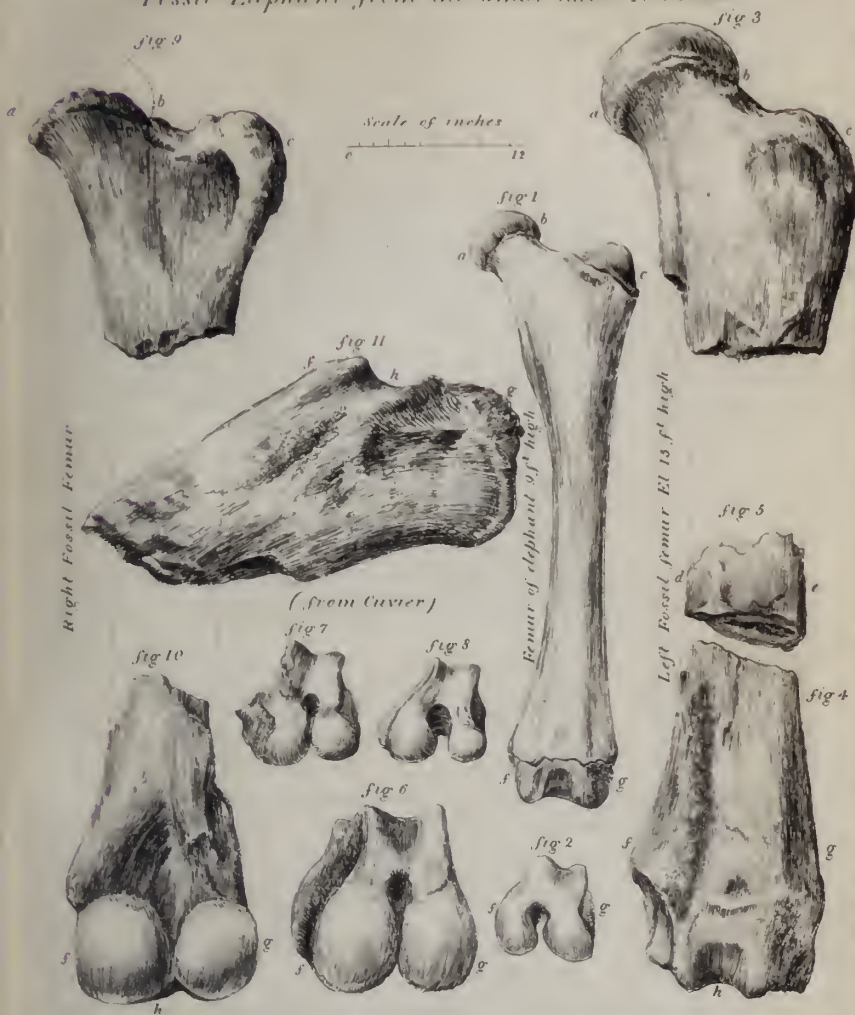
The direction of the horns in the *Hoshangábád* fossil skull give it at first sight the appearance of a buffalo's head: and the convexity and breadth of the forehead as well as the angle of the occiput, both tend to rank it with this genus: or at least certainly to separate it widely from the aurochs and the domestic ox, as described in the following perspicuous passage on the specific difference of these animals by the Baron CUVIER.

“Le front du *bœuf* est plat et même un peu concave: celui de l'*aurochs* est bombé, quoiqu'un peu moins que dans le *buffle*; ce même front est carré dans le *bœuf*, sa hauteur étant à peu près égale à sa largeur, en prenant sa base entre les orbites; dans l'*aurochs* en le mesurant de même, il est beaucoup plus large que haut, comme trois à deux. Les cornes seules attachées, dans le *bœuf*, aux extrémités de la ligne saillante la plus élevée de la tête, celle qui sépare l'occiput du front; dans l'*aurochs*, cette ligne est deux pouces plus en arrière que la racine des cornes; le plan de l'occiput fait un angle aigu avec le front dans le *bœuf*; cet angle est obtus dans l'*aurochs*; enfin ce plan de l'occiput quadrangulaire dans le *bœuf*, représente un demi-cercle dans l'*aurochs*. Ces caractères assignés à l'espèce du bœuf, ne sont pas seulement ceux d'une ou deux variétés; ils se sont trouvés constans, non-seulement dans tous nos bœufs et vaches ordinaires, mais encore dans toutes les variétés étrangères que nous avons examinées.”

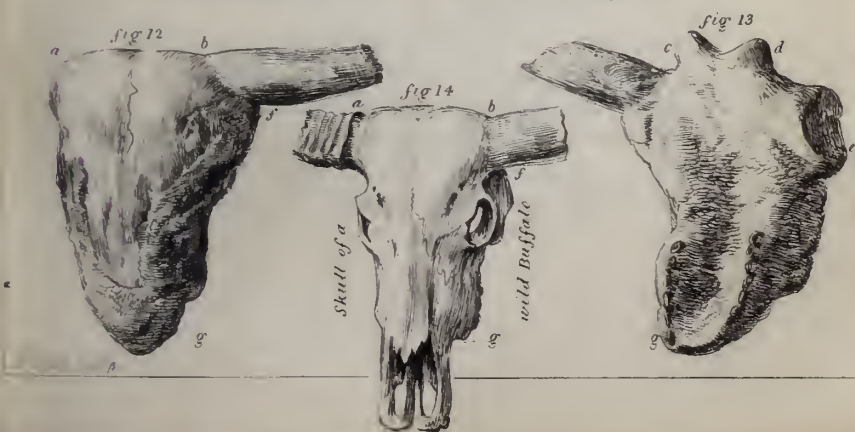
Those acquainted with the comparative anatomy of the Indian species will be able to say whether these distinctions are here also equally marked, and consequently to pronounce at once on the character of the fossil skull. The latter has no point of resemblance to the fossil ox of the Mississippi, described and depicted in the second volume of the *Ann. Lyc. Nat. Hist. of New York*, page 280.

None of the fossil skulls, depicted in the *Ossements Fossiles*, at all resemble the present specimen: neither do the dimensions of the

Fossil Elephant from the Omar nadi Nerbada



Fossil Buffalo's head from Heshangabad



existing diminutive species of cattle bear any comparison to its magnitude. We have not in the museum the skull of a wild buffalo, which would best suit the purposes of comparison, and must therefore rest contented with reporting the exact dimensions and appearance of the specimen.

[After writing the above to be read at the meeting, Dr. EVANS was so obliging as to bring to the Society a very fine skull of a buffalo prepared by himself, which on being placed in juxtaposition with the fossil, accorded with it so entirely in character that no doubt could be entertained of their identity. In dimensions there was a considerable difference in favor of the fossil, but Dr. EVANS has another skeleton on a larger scale, so that the magnitude of the fossil is not so remarkable. He was inclined to think sufficient disparity existed in the arch of the forehead to constitute a variety of species. The absence of the horns however makes it impossible to decide this point.]

The following are the dimensions of the Jabalpur fossil head, as compared with Dr. EVANS' buffalo.

	<i>fossil. modern.</i>	
Forehead, between the sutures at the root of the horn processes,	12	in. 8in.
Length from the crown of the forehead to foremost molar tooth,	18	do. 13
Width of jaw, from exterior of teeth,	6½	do. 6
Length occupied by molar teeth,	7	do. 5.7
Girth of horn process at the base,	13	do. 10.5
Depth of skull from the occiput to the head of the condyles, ..	8½	do. 8
Diameter of the foramen magnum,	2	do. 1.8
Probable length of the head,	26	do. 22

The largest fossil cranium of an *ox*, in the Jardin des Plantes, is 11.8 inches from the crown of the occiput to the root of the nasal bone, which gives a total length of 25 inches, or somewhat less than ours: the circumference of the root of the horn was 13.4 or 0.4 larger than ours.

Taking for granted that the specimen belongs to the buffalo, it is the **FIRST FOSSIL BUFFALO** known to geologists: for although the bones of the ruminantia are found every where most abundantly in the fossil state, it has been always understood, as asserted by PIDGEON, that "As yet no relic whatever has been found which resembles *any variety* of the Indian or the Cape buffalo." It has moreover been remarked as a singular fact, that while the fossil pachydermata, discovered in all parts of the world, the elephant, the rhinoceros, the hippopotamus, and tapir, all belong to the torrid zone; the whole of the fossil ruminants appertain precisely to the genera at present most common in the northern climates, the aurochs, the musk ox, the rein deer, &c.

It is well known that the bones of sheep, goats, antelopes, camelpards, (unless the conjecture by our curator regarding the specimen from the Jumna should prove to be true*,) have never been met with in a fossil state, among the immense abundance of fragments carefully examined by CUVIER himself in the course of twenty years. None of these have yet been discovered among our Indian collections. It is necessary therefore to be most cautious in pronouncing upon our buffalo, until the discovery of his horns shall put the question of departure from the rules developed by the great teacher of the science of fossil osteology, beyond doubt: especially as we find from PIDGEON that "one species of ox, which accompanies the elephant, has massive limbs and a cranium like the buffalo†."

One point may be looked upon as pretty certainly established by the discovery of the present head: namely, that the teeth of the ruminantia from other parts of the Nerbudda valley, and from the bed of the Jamna, which so exactly resemble these now found in situ, protruding from their rocky envelope, belong to the same animal: at least it is safe so to consider them, being desirable to avoid the multiplying of species, except on the strongest evidence.

Meanwhile, we should particularly direct the attention of our geologists of the Nerbudda, (or philo-geologists, if Dr. SPILSBURY will so have it,) to the neighbourhood of Dr. IRVINE'S house at *Hoshangábád*. The spot whence this skull was extricated will most likely be prolific of other riches in equally good preservation. They should be chiselled out of the rock by a skilful stone-cutter, to prevent injury, and at the same time, to take off as much of the rocky matrix as possible. A pair of buffalo's horns would indeed be a rich prize.

We see by the section of the Nerbudda, with which Dr. SPILSBURY has now favored the Society‡, that the calcareous gravelly conglomerate extends over a considerable portion of the valley at the foot of the cliffs:—four points, including the spot where the fossil jaw of a horse was picked up in making this very section from Tendukhéra, are now marked upon the accompanying sketch-map as the ascertained sites of fossil bone deposits. More will doubtless be discovered even by the persevering exertions of one individual; but a field of so great promise, were it in Europe, would not be left to such slow cultivation. It would be made the object of a special expedition of scientists (as they are called at Cambridge) from the Government, or from some geological association, and the impatience of theorists would soon be satisfied with a full

* See Proceedings of the 3rd July, 1834.

† PIDGEON'S Fossil Remains, p. 116.

‡ See the foregoing article.

history of the antediluvial or postdiluvial tenants of the Nerbudda fossil bason : for it is by no means clearly established yet to what epoch the debris belong. We have to learn whether the gravelly brescia ever *underlies* the alluvium, or any of the regular deposits of the valley ? or whether it merely fills up crevices and angles at the foot of cliffs, from which the trickling of springs charged with carbonate of lime might be derived. I have before remarked, that the conglomerate matrix contains rolled pebbles of quartz, felspar, and basalt, and therefore its formation is much subsequent to the deposit of the flötz trap, the most recent of the regular rock deposits of the Sagar district. The trap itself is of course anterior to the black alluvium of the Nerbudda valley, which is principally formed from its detritus. Is the brescia contemporaneous with this black alluvium or subsequent thereto ? is the question to be solved.

Professor BUCKLAND was unable to determine whether the Ava bones of mastodons, hippopotami, alligators, &c., were referrible to "the most recent marine sediments of the tertiary formation, like the elephant of the Norfolk crag ; or to the antediluvian fresh-water deposits analogous to those of the Val d'Arno ; or lastly to the *diluvial* accumulations more modern than either of these formations ;" but he inclined to refer them to the latter, because of the rolled gravel cemented to them, which resembled the matrix of many of the European mammalian fossils. So far the Ava fossils agree with those of central India, but they differ in being mineralized (at least such as we have lately received from Col. BURNEY) with hydrate of iron instead of carbonate of lime. Capt. MACLEOD however informs me, that such as were calcareous were rejected by Col. B., not being considered to be thoroughly fossilized.

But I must now quit this interesting subject, hoping shortly to recur to it, armed with additional facts from Sergt. E. DEAN, whose hippopotamus' tooth and other curious and new fragments from the Jamna were lately submitted to the Society, and whose notes are only withheld from publication in expectation of further information from the same source.

VI.—*Determination of the Errors of Division of the Mural Circle at the Madras Observatory, by T. G. TAYLOR, Esq. H. C. Astronomer, Fort St. George.*

[In a letter to the Editor.]

I beg to trouble you with the result of some observations which I lately made with a view of determining the amount of error of division of the Madras Mural Circle.

Hitherto (with but one exception I believe*) it has been the practice of astronomers to avoid the effect of error of division by

* PROFESSOR BESSEL.

employing a large number of divisions, and by occasionally shifting the zero point of the instrument to another set of divisions : the employment of several divisions at each observation is objectionable only as far as regards fatigue, and loss of time to the observer ; but to the shifting of the zero point there are objections to be urged of a much more serious nature ; it is true, in the determination of fixed angles, such as the altitude, or north polar distance of the fixed stars, the plan of shifting the zero point of an instrument is applied with some advantage, but in the determination of the ever-changing places of the sun, moon, and planets, the shifting of the zero point is of no avail whatever ; and in the determination of parallax, of the coefficients of aberration, nutation, &c. to which a good set of observations are applicable, the plan cannot be employed at all. With this view of the subject, since the erection of the Madras Mural Circle, in January 1831, I have employed the circle *without* shifting the zero point : and this circumstance, added to the fact of the division of this instrument having been effected upon an entirely new plan, rendered it very desirable that some knowledge of the amount of error of division should be obtained ; accordingly I set to work as follows.

It is well understood that parallel rays of light after passing through an object glass, converge and meet eventually at a point which is called the principal focus : the converse of this is, that rays of light which diverge from the focal point after passing through the object glass will pursue a parallel course, and hence will appear distinct when viewed through an astronomical telescope adjusted to the solar focus. To be better understood in what follows, I must here refer to the description of the Madras Mural Circle given in volume I. of the Results of the Madras Observations for 1831 : it is there stated, that “ the telescope is furnished with an axis of its own, which works into the axis of the circle ;” hence it will appear plain that the telescope being unclamped at the two ends from the circle, it moves on its own axis *independently* of the circle, or on being clamped *to* the circle, it moves *with it* at pleasure. Thus much being premised, I clamped the circle, so that 0 corresponded with the zero of the reading microscope A, and read off B, the opposite microscope ; I then directed the telescope to the object glass of a DOLLOND’s five feet achromatic, in the focus of which I had previously fixed a pair of lines crossing one another at an angle of about 30° ; these lines which were distinctly seen, were bisected by the movable wire of the telescope, the telescope being first firmly clamped to the circle ; the circle was now loosed, and moved with the *attached* telescope to the object glass of another telescope, (a 12 inch theodolite telescope for want of a better,) the cross wires of which

had been previously adjusted to subtend as nearly as possible an angle of 90° with the former; the difference between the reading now obtained, and the first reading, gives the exact angle between the two, + or — error of division. The telescope being now released from the circle was again directed to the first-named telescope; again clamped to the circle; and, by means of the movable wire, a bisection again made; releasing the circle, it was with the attached telescope again turned till the telescope bisected the wires of the smaller telescope, when 180° nearly, or double the angle subtended by the pairs of cross wires, was read off; pursuing this course after five readings we arrived at the point of departure: now the difference between the first and last divided by four, or the true value of the angle, being added to the first reading gives the second; being again added gives the third, &c. these compared with the actual reading give the error of division of the points 0° , 90° , 180° , &c. thus:—

A.	B.	Mean of A and B.	Mean An- gle.	Interpolat- ed.	Error of division.
° ' "	"	"	" "	"	"
3 0 0.0	1.1	0.55	21.90—0.55	0.55	0.00
90 0 5.2	5.2	5.20	<u>4</u>	5.89	—0.69
180 0 10.7	12.2	11.45	"	11.23	+0.22
270 0 15.4	17.4	16.40	"	16.57	—0.17
360 0 22.9	20.9	21.90	=+5.34	21.90	0.00

From the mean of ten repetitions in this way the errors came out,

For 0° and 180° =	0.00
90 and 270	—0.45
180 and 360	—0.03

For the error of divisions intermediate between the above, I placed DOLLOND's 5-feet Telescope as before, and by means of two wooden supports, A. B., a 42-inch Achromatic, by DOLLOND, was supported immediately above, so that a pair of cross lines fixed in the focus, subtended an angle of 30° with the cross-lines fixed in the other Telescope. I then made the following measures :

A.	B.	Mean of A and B.	Mean An- gle.	Interpolat- ed.	Error of division.
° ' "	"	"	" "	"	"
0 0 0.0	1.9	0.95	18.50—0.95	0.95	0.00
30 0 5.0	7.0	6.00	<u>3</u>	6.80	—0.80
60 0 12.0	12.6	12.30	"	12.65	—0.35
90 0 18.6	17.5	18.05	=5".85	18.50	—0.45
In a similar manner.			" "		
90 0 0.0	59.2	59.60	1.88—0.05	0.05	—0.45
120 0 0.5	59.5	0.00	<u>3</u>	0.66	—0.66
150 0 1.7	59.8	0.75	"	1.27	—0.52
180 0 1.1	2.6	1.85	=0".61	1.88	—0.03

In this case to find the true angle subtended by the pairs of cross lines, it is necessary to apply to the mean of A and B the errors already found above for 0° and 180° and for 90° , and 270° and then to interpolate between these *corrected* readings: from the mean of ten measures in this way the errors come out as follows:

Error of division.

At	°		"	
At	0	and	180	0.00 This assumed = 0.
30	—		210	—0.26
60	—		240	—1 00
90	—		270	—0.45 found above.
120	—		300	—1.57
150	—		330	—2.15
180	—		360	—0.03 found above.

To ascertain the error of division at the points intermediate between 0° and 30° and between 36° and 60° , &c. I placed the 42-inch telescope by DOLLOND (already spoken of as the upper telescope) so near to the lower telescope, that the images of the pairs of cross-wires subtended an angle of five degrees nearly, and in a manner similar to that explained above, made the following measures of the angle:

Microscope A.	B.	Mean of A and B.	Mean of Pairs.	True angle.	Interpolated.	Error of division.
° ' "	"	"	"	" "	"	"
0 0 0.0	1.0	0.50	1.10	15.11—1.10	1.10	0.00
5 0 1.3	1.2	1.25	2.42	6	3.44	—1.02
10 0 3.0	3.0	3.00	4.85		5.78	—0.93
15 0 6.9	7.1	7.00	8.12		8.11	+0.01
20 0 8.2	11.0	9.60	10.32	"	10.45	—0.13
25 0 10.8	14.0	12.40	12.47	≐2.335	12.78	—0.32
30 0 15.1	14.6	14.85	14.85		15.11	—0.26
25 0 11.9	13.2	12.55				
20 0 9.8	12.3	11.05				
15 0 9.1	9.4	9.25				
10 0 6.1	7.3	6.70				
5 0 3.5	3.7	3.60				
0 0 1.1	2.3	1.70				

The above differs from the preceding only that I have here returned back to the point of departure in an inverse order, instead of again beginning at $0^\circ 0'$.

In a similar manner the following five series were obtained.

Microscope A.	B.	Mean of A and B.	Mean of Pairs.	True angle.	Interpolated.	Error of division.
° ' "	"	"	"	" "	"	"
30 0 0.0	59.8	59.90	0.17	19.65—0.43	0.43	—0.26
35 0 3.5	5.3	4.40	4.25	6	3.63	+0.62
40 0 6.6	8.7	7.65	7.65	"	6.84	+0.81
45 0 9.5	10.7	10.10	10.05	≐3.705	10.04	+0.01
50 0 12.3	14.5	13.40	13.40		13.24	+0.16
55 0 14.7	16.9	15.80	15.30		16.45	—1.15

60	0	18.2	19.3	18.65	18.65		19.65	-1.00
55	0	13.2	16.4	14.80				
50	0	12.0	14.8	13.40				
45	0	9.6	10.4	10.00				
40	0	6.4	9.3	7.65				
35	0	2.5	5.7	4.10				
30	0	0.6	0.3	0.45				
60	0	0.0	0.3	0.15	1.42		2.42	-1.00
65	0	1.5	2.6	2.05	3.60	15.65-2.42	4.63	-1.03
70	0	4.5	5.1	4.80	6.45	6	6.83	-0.38
75	0	7.9	7.2	7.55	8.70	"	9.04	-0.34
80	0	10.2	11.1	10.65	11.05	=2.205	11.24	-0.19
85	0	13.8	13.3	13.55	13.35		13.45	-0.10
90	0	15.1	15.3	15.20	15.20		15.65	-0.45
85	0	12.8	13.5	13.15				
80	0	10.7	12.2	11.45				
75	0	10.0	9.7	9.85				
70	0	7.3	8.9	8.10				
65	0	4.6	5.7	5.15				
60	0	2.7	2.7	2.70				
90	0	0.0	0.9	0.45	59.90	" "	0.35	-0.45
95	0	59.4	58.0	58.70	58.02	60.35-52.67	59.07	-1.05
99	59	56.1	55.0	55.55	55.15	6	57.79	-2.64
104	59	54.8	53.2	54.15	54.77	"	56.51	-1.74
109	59	53.5	52.0	52.75	52.92	=1.28	55.23	-2.31
114	59	53.0	51.0	52.00	52.17		53.95	-1.78
119	59	52.0	50.2	51.10	51.10		52.67	-1.57
114	59	53.0	51.7	52.35				
109	59	53.2	53.0	53.10				
104	59	55.8	55.0	55.40				
99	59	54.2	55.3	54.75				
94	59	57.2	57.5	57.35				
89	59	59.0	59.7	59.35				
120	0	0.0	57.0	58.50	59.85	" "	1.42	-1.57
125	0	1.5	59.5	0.50	2.52	10.65-1.42	2.96	-0.44
130	0	3.9	0.7	2.30	3.42	6	4.50	-1.08
135	0	5.0	3.0	4.00	5.50	"	6.04	-0.54
140	0	7.7	5.3	6.50	7.32	=1.538	7.57	-0.25
145	0	8.4	7.1	7.75	7.45		9.11	-1.66
150	0	8.9	8.1	8.50	8.50		10.65	-2.15
145	0	7.3	7.0					
140	0	9.9	6.4					
135	0	8.0	6.0					
130	0	5.7	3.4					
125	0	5.6	3.5					
120	0	2.1	0.3					
150	0	0.0	59.0	59.50	0.00	" "	2.15	-2.15
154	59	58.8	57.5	58.15	56.57	62.15-38.98	58.29	-1.72
159	59	51.0	52.3	51.65	51.52	6	54.43	-2.91
164	59	48.0	48.5	48.25	49.55	"	50.56	-1.01
169	59	44.0	44.7	44.35	44.67	=3.862	46.70	-2.03
174	59	42.2	43.0	42.60	42.17		42.84	-0.67
179	59	38.2	39.7	38.95	38.95		38.98	-0.03
174	59	41.8	41.7	41.75				
169	59	44.2	45.8	45.00				
164	59	50.2	51.5	50.85				
159	59	50.8	52.0	51.40				
154	59	55.0	55.0	55.00				
150	0	1.3	59.7	0.50				

From the mean of 10 sets, similar to the above, the errors of division for two opposite divisions are as follows :

°	°	"	°	°	"
Error of 0 and 180		=0.00	Error at 95 and 275		=0.88
5	185	-0.64	100	280	-1.58
10	190	-0.46	105	285	-1.17
15	195	+0.13	110	290	-1.48
20	200	+0.45	115	295	-1.77
25	205	+0.61	120	300	-1.57
30	210	-0.26	125	305	-0.66
35	215	-0.56	130	310	-0.96
40	220	-0.29	135	315	-1.39
45	225	+0.05	140	320	-1.33
50	230	-0.12	145	325	-1.75
55	235	-0.80	150	330	-2.15
60	240	-1.00	155	335	-1.67
65	245	-1.20	160	340	-1.20
70	250	-1.30	165	345	-0.46
75	255	-0.69	170	350	-0.20
80	260	-0.23	175	355	+0.09
85	265	-0.12	180	360	-0.03
90	270	-0.45			

I am not prepared at present to furnish the error of the divisions intermediate between the above, but I may remark that out of a great many which *I have* examined, the largest error I have found does not exceed that above found for 150° and 330°.

VII.—*Table of the Times of high water at the principal places between Calcutta and Point Palmiras, prepared by Mr. P. G. SINCLAIR.*

We have much pleasure in giving insertion to the accompanying table, which will be extremely useful not only to navigators here, but also to the philosophers in Europe, who are now engaged in investigating the course of the tidal waves over the entire globe. We published in vol. ii. p. 151, a list of Professor WHEWELL's desiderata regarding the eo-tides of the Indian ocean. His memoir on the eotidal lines is published in the Trans. Roy. Society 1833, Pt. 1, and we there find that the coasts of India present nearly a blank: the time of high water at Point Palmiras differs two hours from the time given by Mr. SINCLAIR's observations. We hope to be furnished from our correspondents at other places, such as Masulipatam, Madras, Chittagong, Kyook Phyoo, Penang and Singapur with tables similar to the present, but we would suggest that the other desiderata, of the lift of the tide—the *establishment of the place*,—the correction for other days of the semi-lunar period, &c. should also receive the attention of observers.

The present table must not be understood as rigidly correct, but rather as an useful practical approximation; for the intervals of retar-

datations of the tide from day to day are made uniform, whereas a correction ought theoretically to be applied for the irregularity of the moon's daily motion : this correction calculated by Professor WHEWELL for the moon's mean parallax is as follows :

Time of Δ 's transit next before the tide, 0 1 2 3 4 5 6 7 8 9 10 11 12 hours.

Correction,..... 0 —16 —31 —41 —44 —31 0 +31 +44 +41 +31 +16 0 minutes.

In registering the time of high water for any passage, so as to form the data of calculation, it should be always remembered that the interval between the moon's passage over the meridian, in apparent time, and the tide following it, is what is chiefly required, because it furnishes the direct means of verifying the above corrective equation.—ED.

A Tide Table between Calcutta and False Point, prepared by Mr. P. G. Sinclair.

Moon's age.	Calcutta.	Myapur.	Diamond.	Culpee.	Mud-point.	Kedge-ree.	New Anchorage.	Saugor.	Saugor Point.	Spit Buoy.	Bala-sore River.	Centre of Bala-sore Roads 15 Fath.	Reef Buoy.	Myapur Isle or Pt. Pal-miras.	False Point.
Full & change	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	3.48	2.48	2.18	1.48	12.48	12.18	11.48	12.18	10.58	10.18	10.48	9.48	9.48	9.18	8.18
2	4.36	3.36	3.6	2.36	1.36	1.6	12.36	12.6	11.46	11.6	11.36	10.36	10.36	10.6	9.6
3	5.24	4.24	3.54	3.24	2.54	1.54	1.24	12.54	12.34	11.54	12.24	11.24	11.24	10.54	9.54
4	6.12	5.12	4.42	4.12	3.42	2.42	2.12	1.42	1.22	12.42	1.12	12.12	12.12	11.42	10.42
5	7.0	6.0	5.30	5.0	4.30	3.30	3.0	2.30	2.10	1.30	2.0	1.0	1.0	12.30	11.30
6	7.48	6.48	6.18	5.48	4.48	4.18	3.48	3.18	2.58	2.18	2.48	1.48	1.48	1.18	12.18
7	8.36	7.36	7.6	6.36	5.36	5.6	4.36	4.6	3.46	3.6	3.36	2.36	2.36	2.6	1.6
8	9.24	8.24	7.54	7.24	6.54	5.54	5.24	4.54	4.34	3.54	4.24	3.24	3.24	2.54	1.54
9	10.12	9.12	8.42	8.12	7.12	6.42	6.12	5.42	5.22	4.42	5.12	4.12	4.12	3.42	2.42
10	11.0	10.0	9.30	9.0	8.30	7.30	7.0	6.30	6.10	5.30	6.0	5.0	5.0	4.30	3.30
11	11.48	10.48	10.18	9.48	8.48	8.18	7.48	7.18	6.58	6.18	6.48	5.48	5.48	5.18	4.18
12	12.36	11.36	11.6	10.36	9.36	9.6	8.36	8.6	7.46	7.6	7.36	6.36	6.36	6.6	5.6
13	1.24	12.24	11.54	11.24	10.24	9.54	9.24	8.54	8.34	7.54	8.24	7.24	7.24	6.54	5.54
14	2.12	1.12	12.42	12.12	11.12	10.42	10.12	9.42	9.22	8.42	9.12	8.42	8.42	7.42	6.42

VIII.—*Proceedings of the Asiatic Society.**Wednesday Evening, the 3rd September, 1834.*

The Reverend W. H. MILL, D. D. Vice-President, in the Chair.

Read the Proceedings of last Meeting.

Read a letter from Mr. M. M. MANUK, intimating his desire to withdraw from the Society.

Read a letter from H. HARKNESS, Esq. Secretary to the Royal Asiatic Society of Great Britain and Ireland, expressing the thanks of that Society for the 17th volume of the Asiatic Researches.

The Secretary apprized the Society, of the arrival per Ship Edmonstone, of the twenty copies of the ancient Canarese Alphabet adverted to on the Meeting of 28th May, 1834, as presented by WALTER ELLIOT, Esq. through the Bombay Branch Asiatic Society.

It was resolved that copies of the Alphabet should be sent to the Bishop's College, the Education Committee, the Sanscrit College at Benares, and to such persons as may be engaged in deciphering ancient inscriptions.

Library.

Read a letter from Dr. N. WALLICH, presenting on the part of the Royal Society of Northern Antiquaries at Copenhagen, the following works with complimentary expressions :

A circular accompanied, explaining the objects of the association, and soliciting the co-operation of those, especially of the English nation, who may be able to assist in developing the early history of Northern Europe.

[A copy of the prospectus is printed on the cover of the present number.]

1. E. RASK's *Commentatio de pleno systemate decem sibilantium in linguis montanis, item de methodo Ibericam et Armenicam linguam litteris Europæis exprimendo.* Hafniæ, 1832, 4to.2. Ditto, *Singalesisk Skriftlærr*, (Cingalese Grammar,) Colombo, 1821, 8vo.3. Ditto, *Vejledning*, or Introduction to the Akra language of the Coast of Guinea, with an Appendix on the Akvambu language.4. Ditto, *Lapponic Grammar*.5. Ditto, *Italian Grammar?* 1827.6. Ditto, on *Ancient Egyptian Chronology.* Copenhagen, 1817, 4to.7. Ditto, on *Ancient Hebrew Chronology*, 1828, 8vo.8. *Old Northern Saga's* (Tales). Edited by the R. S. of North Antiquities, 11th vol. 1833.9. *Færeyinga Saga*, or A History of the Inhabitants of the Islands called the Færoes. The original Icelandic text, with translations into Færoe, Danish, and German, 1829.10. 11. *Tidskrift*, Journal of the Northern Antiquities, by ditto.12. *Nordisk Tidskrift*, Northern Journal of Antiquities. Edited by the Royal Society of Northern Antiquities, 1826-9.13. *Paradisa Missir*, (Paradise Lost,) translated into Icelandic, by Joe Thorlaksson.14-15. *Scripta Historica Islandorum*, vols. iv. and v. Hafniæ, 1833.16-17. *Lögbók Islandinga*, Codex Juris Islandorum Antiquissimus, I. and II. 1829.18. *L. Giesebrecht*. The R. S. of N. Antiquities at Copenhagen.

Read a letter from M. RICHY, Judge of Chandernagore, presenting on the part of M. GARCIN DE TASSY, a copy of his

Notice sur les fêtes populaires des Hindous d' apres les ouvrages Hindoustani.

The following works were also presented :

Commentaire sur Le Yaçna, L'un des Livres Religieux des Parsis, by Eugene Barnouf, vol. I.—*by the author.*

Origin of the Sikh Power in the Punjab, and Political Life of Muba Raja RUNJEET SINGH, &c. compiled by H. T. PRINSEP—*by the compiler.*

Journal Asiatique, Nos. 71, 72 and 74—*by the Asiatic Society of Paris.*

Transactions of the Society of Arts, &c. vol. xlix, 1 and 11 parts—*by the Society.*

Proceedings of the Geological Society, Nov. 6, 1833, Dec. 4*.

Illustrations of the Botany, and Natural History of the Himáláyan Mountains, &c. Part II.—*by F. J. Royle, Esq. F. L. S. and G. S. M., R. A. S.*

Meteorological Register for July, 1834—*by the Surveyor General.*

The India Journal of Medical Science for September—*by the Editors.*

The following Books were received from the Book-sellers.

Lardner's Cabinet Cyclopedia, History of Natural Philosophy.

—————, Rome, 1st vol.

—————, Stebbing's History of the Church, 2nd vol.

Antiquities.

A native drawing of a compartment of one of the sculptured slabs of a building near Bhilsa, was presented by Dr. G. S. SPILSBURY.

This appears to be the very building whence Mr. HODGSON took the facsimile of his inscription, presented at a former meeting : the sculpture represents the erection or consecration of a Bauddha temple or *Chailya*. It was visited in 1817 or 18 by Captain FELL, who described the inscriptions on the walls in one of the news-papers of the day.

Read a letter from Mr. TREGGAR of Jaunpur, descriptive of two gold coins of the Canonj group, recently discovered in digging on the site of an old fort called *Jaichand's koth* near Jaunpur.

[We shall have pleasure in inserting this paper when we have collected sufficient of the Canonj coins to make a plate. The inscriptions on the present coins are very distinct, in the character No. 2, Allahabad column, and the names are new.]

Further observations on the Hindu coins by Major STACY, were also submitted.

A note from Mr. SPIERS, of Allahabad, forwarded 4 coins dug up lately near that place.

They belong to what has been called the Behat group.

A paper by Col. BURNEY, Resident at Ava, was read, giving a translation and copious commentary in illustration of the Burmese inscription at *Buddha Gaya* : of which the original facsimile taken by his brother Captain GEORGE BURNEY, on the spot, accompanied.

This will be published at length ; the principal discrepancy between Col. BURNEY's translation and that made by RATNA PAULA is in the date, which the former carries back two hundred years, namely, to 468 Burman era, (A. D. 1106.) The first figure is rather indistinct in the inscription, and may be read either as

* This day's proceedings contains a notice of Lieut. BURNES' Memoir on the Geology of the banks of the Indus, the Indian Caucasus and the plains of Tartary.

a 4 or a 6. The facsimile must be lithographed to place the data before those who wish to decide the point. Col. BURNEX's interesting paper terminated with a highly curious extract-translation from the journal of the junior Burmese envoy, describing the visit of the mission to "Buddha's holy tree" at Gaya, and the ceremonies performed there in honor of the King of Ava.

Physical.

The Secretary exhibited to the members present the head of a mummy, and two mummied preparations of the *ibis* or sacred bird of Egypt, brought round by Lieutenant ANCHBOLD, being a part of his present alluded to at the last meeting.

The effect of damp air had already begun to be perceptible on the exposed parts of the head; nothing of the under jaw remaining but the bare bone, tinged of a dark brown colour from the bituminous matter of the wrapper. By keeping it in a glass case hermetically closed, and containing some lumps of muriate of lime, it is hoped that the specimens may be preserved for any length of time in the museum.

A letter was read from Lieut. W. FOLEY, dated Khyouk Phyou, Ramree, 12th August, forwarding some specimens of fossil shells recently met with by himself in the interior of the island; also some coal from a new site.

The following extract explains the particulars of this new discovery:

"On my return to Arracau I made inquiries respecting the fossil marine shells that were at one time brought to me, and I have been so fortunate as to obtain them. They were found on a hill, in the neighbourhood of "*Chambo*" (a village in the interior of Ramhree island), imbedded in a grey sandstone, which is very hard and gritty. The height of the hill may be as much as 100 feet above the plain. The weather has been so wet and boisterous that I have not been able to visit the spot, so that my information has been derived from the Mughs whom I had sent out to the place. They brought me in the shells, as also pieces of the sandstone. In the latter some remains of the shells are distinctly visible. The natives of Arracan attach much value to the shells on account of their supposed medicinal properties; the shells are pounded up, made into a kind of paste, and applied, as a saive, to sore eyes. Along with these shells I have also dispatched to you a specimen of coal discovered in Rambree island, near the village of "*Kyong-Towng*" in the "*Laông*" circle; it was found resting on a bed of clay, near the surface, and did not appear to be very abundant. For the reason above mentioned I was not able to visit the spot, so sent a man out for the coal. Coal, I have no doubt, exists in abundance throughout Arracan; and of that hitherto discovered, I expect the *Syne-Kyoung* coal, if worked, would prove the best. I believe it contains no iron pyrites, as is the case with the "*Oogadong*" and "*Phooringoné*" coal. The coal I now sent is highly bituminous, and very much resembles the "*Kalabadom*" coal. I observe an error in the *sketch* of the site of the *Oogadong* coal published in your 2nd volume of the Journal As. Soc. plate 19, for November, 1833; instead of "*Syne-Kyoung*" creek, it should have been "*Oodagong*" creek. The former word should also have been *Syne-Kyoung*, not "*Syneg-Kyoung*."

"I have also dispatched to you a specimen of cotton obtained from some Bourbon cotton seed sown by Captain WILLIAMS in the Government Garden at Rambree town in November, 1833, and gathered in March, 1834. The soil was a stiff clay and I believe, too cold and damp to favour the cultivation of the plant. It would however thrive well on the hills, where the soil is light."

Three of the shells are small univalves of 4 whorls, resembling the genus *turbo* : one is a species of *turritella* ; the matrix is grey sandstone, containing the debris of trap rocks, and effervescing in acids slightly.

The coal is a lignite, leaving only 1.8 per cent. of ash on incineration.

Read the following extracts of a letter from the Reverend R. EVEREST regarding the fall of an aerolite at Hissar.

" Having seen in the possession of Mrs. METCALFE of Delhi a fragment of meteoric stone, which she informed me had lately fallen near Hissar, I wrote to Capt. PARSONS, Supt. H. C. Stud there, for particulars, and have now the pleasure of sending his answer to you. The fragment I have seen bears the usual external characters of meteoric stone, has the same specific gravity, viz. 3.6, and affects the magnet. There can therefore be no doubt of the fact.

ROB. EVEREST.

Extract of a letter from Captain Parsons, dated Hissar, 2nd August, 1834.

" I hasten to give you all the information I possess relative to the meteoric stone. It fell on the 8th of June, (as far as I could ascertain) at Charwallas, a village 23 coss west of this ; about 8 o'clock in the morning the sky was cloudy and the weather gusty, or approaching to a north-wester, but no rain ; very loud thunder, similar to constant discharges of *heavy* artillery, was heard for about half an hour before it fell, and in the direction *with* the wind to a great distance ; when the stone fell it was accompanied by a trembling noise similar to a running fire of guns. It fell in the jungle close to a palee (or herdsman), who was out with his cattle. The original weight of the stone was 12 seers ; but before my man reached the place, it had been broken and pieces taken away to Bikaneer, Puttialah, &c. the piece I have is upwards of 4 seers, and if you would like to send it to Calcutta, you are most welcome to it, and I will send it to you, should you wish for it."

Further specimens of the Jumna fossil bones belonging to Serjeant E. DEAN, were exhibited, and a paper on the subject by the same party was read.

[This will be given at length hereafter.]

IX.—Miscellaneous.

Mr. Trevelyan's Defence of Sir William Jones' System of Oriental Orthography.

The Hurkaru newspaper of the 29th August, contains a reply to the article in our June number (p. 281), on the Adaptation of the Roman Alphabet to the Orthography of Oriental Languages, by the gentleman who has come forward with such vigour to revive the scientific system, as a necessary concomitant of his more extensive scheme of publishing Oriental books altogether in Roman characters. We have not space to insert the whole of his observations, but to such as bear upon the point at issue, we feel bound to give a place, being more satisfied, the more we reflect on the subject, that it is essential and imperative in the present widely diffused cultivation of the learned languages of India, to adhere to that notation which can alone command general acquiescence throughout Europe, and which is in fact the system followed in the great majority of the Dictionaries, Grammars, and transcribed works not only of our learned societies, but even of our colleges and schools.

The fundamental maxim of Sir WILLIAM JONES was, that each original sound and its appropriate symbol in the Déva Nágari or Arabic should have its representative in the Roman, " with due regard to the primitive power of the latter alphabet."

Professor RASK also advocates the making of the Roman substitutes as nearly consonant as possible to the original;—"in his vero, me quidem iudice, hoc præceptum semper servandum, ut *quam proxime ad mentem ipsius nationis exprimantur ejus literæ.*" On this score the JONESIAN far surpasses the GILCHRISTIAN scheme of vowels, the long and short vowels of the same class being expressed by the same character:—but we must allow Mr. TREVELYAN to speak for himself.

"Sir WM. JONES' plan is systematic and complete in all its parts, so that in every case in which an analogy exists between different sounds, a corresponding analogy will be found to pervade the signs by which they are represented. Thus the long sound of *a* is *ā*; of *i*, *ī*; and of *u*, *ū*; and the diphthong *ai*, which is compounded of *a* and *i*, is represented by those letters, and *au* (*ow*) which is compounded of *a* and *u*, by *au*. The consequence of this strict attention to preserve an analogy in the sign corresponding to the variations in the sound is, that the acquisition of the Alphabet is greatly facilitated to the learner, who in fact has to make himself acquainted with only five elementary signs which are the representatives of as many original sounds, and the remaining five are only elongated form or composites of these.

"In Dr. GILCHRIST's plan, with a single exception, there is no analogy whatever between the long and short forms of the vowels, and between the diphthongs and their component vowels. Thus in his system *a* is the long form of *u*, *ee* of *i*, and the diphthong *ai* is represented by *ue*, and *au* by *u o*. It is needless to dilate on the confusion which this want of system must produce in the mind of every learner. No help is here provided for him, and instead of being guided from step to step by a change in the form of the character, sufficient to distinguish the modification in the sound, while enough is retained of the original letter to mark the elementary connexion, he is perplexed by a variety of characters between which no kind of analogy is capable of being traced. In short, instead of having only five signs to get by heart, he has no less than nine. In tracing the analogy between corresponding modifications of sound, this plan is worse than if no assistance were afforded him. In this eccentric system of letters long vowels are actually divorced from their partners and so disguised as to render it impossible to recognize the original connection between them, and diphthongs are in like manner kidnapped from their parent vowels, and disfigured worse than Gypsy children. Who would suppose that *u* is the legitimate husband of *a*, that *ee* is the devoted wife of *i*, that *ue* is the interesting offspring of *a* and *i*, and *uo* the eldest hope of *a* and *u*. This is not a system of *orthography*, but if I may be allowed to invent a word, of *kakography*; of confusion, mystification and absurdity. It is singular that when a man sat down with a *carte blanche* before him to invent a system of letters, he was not able to devise something better than this; and it is still more so that having the labours of his learned predecessor Sir W. JONES to profit by, when he altered he should have altered so much for the worse.

"Another advantage of Sir WILLIAM JONES' plan is that, besides being complete in itself, owing to the perfect analogy which exists between the different letters, it bears a strict correspondence throughout to the great Indian or Deva Nāgarī alphabet. All the alphabets derived from the latter are very systematic, and a scheme which is otherwise cannot properly represent them. But Sir W. JONES does it exactly, as will be seen from the following table:

अ	<i>a</i>	in	above	आ	<i>ā</i>	in	art
इ	<i>i</i>		in	ई	<i>ī</i>		police

उ	u	push	ऊ	ú	rule
ए	e	they	ऐ	ai	aisle [pronunciation.
ओ	o	note	औ	au	causa, Italian or Latin

“The natives of India are therefore already quite familiar with the idea of distinguishing the modification of sound by a corresponding modification of sign, and when they see the same plan adopted in the anglicized version of the alphabet, they immediately recognize the propriety of it, and enter into the spirit of the scheme. As the new orthography is mainly intended for the people of India, the circumstance of its being entirely coincident with their preconceived feelings and ideas must be allowed to be an advantage of no small importance.

“It is hardly necessary to observe, that no kind of analogy exists between Dr. GILCHRIST's and the Indian Deva Nágarí alphabet. When an Indian reads Sir WILLIAM JONES' alphabet, he sees a long *ú* immediately succeeding the short *a*; a long *i* the short *i*, and a long *ú* the short *u*, (the long vowel being in each case distinguished by a mark as in the Sanscrit) which is just what his previous knowledge would lead him to expect; but when he comes to Dr. GILCHRIST's plan, he finds *a* following *u*, and *ee* following *i*. What therefore would be his opinion of the comparative merits of the two systems? Would he not say, that one is in every respect as complete as the alphabet of the gods (Deva Nágarí), while the other is an inexplicable mass of confusion.

“Another advantage attending Sir WILLIAM JONES' system is, that it is not only analogous to, but is the very system itself which is used in expressing Latin and all its derivations; that is Italian, Spanish, French, &c. It is true that in England we do not pronounce Latin in this way, but this is only because we have barbarized it, and made it accord with our Saxon pronunciation. Even in Scotland and Ireland, to say nothing of Continental Europe, they read Latin exactly in the way in which it is now proposed to read Hindusthání. This entire coincidence of the new Hindusthání orthography with the orthography of the learned language of the whole of Europe, and with that of most of its colloquial languages, is a point of great importance. Even in the present age its advantage will be felt, in so far as the learned all over Europe, and in most cases the vulgar also, will by this means obtain direct access to our Indian Literature; and what is still more deserving of consideration, a foundation will be laid for the establishment in due time of an uniform system of orthography throughout the world. This is an object, which, however distant the prospect of accomplishing it may be, no man who has the slightest regard for posterity, should ever lose sight of:—next to the establishment of an universal language, that grand desideratum of the philosopher and the philanthropist, the establishment of an universal system of orthography will most tend to the production of unrestricted freedom of intercourse between all the families of the human race; and the one has also a direct tendency to bring about the other. Now if GILCHRIST's plan were to be generally maintained in India, so far from having advanced a step towards this grand result, we should make a decidedly retrograde movement, and the proceeding would be tantamount to shutting the door to the possibility of an uniform system of writing and printing being ever adopted in the eastern and western hemispheres. GILCHRIST's plan is utterly abhorrent from the Roman family of languages, and it does not even coincide with the English, as will be shown hereafter.

“Sir WILLIAM JONES' plan has a simple character for every simple sound, while in Dr. GILCHRIST's simple sounds are in three instances expressed by double letters

[ee, oo and oo]. This, to say the best of it, is an extremely clumsy contrivance, and in the business of nations and course of ages it would lead to an immense unnecessary expenditure of time and money. That this is the case, may be seen by taking the example of a single sentence,

Bees tees moorghabee huen toomharee peechee,

which in Sir WILLIAM JONES' orthography would be,

Bís tís murghábí haiṇ tumhárfí píchí.

"There are 37 letters in this sentence written according to Dr. GILCHRIST's plan, and only 30 if it be written according to JONES; that is to say, in only 6 words the former exceeds the latter by no less than 7 letters. Apply this to a book, and conceive the waste of types, paper, and valuable time which must result from it. Supposing an octavo volume, printed according to Sir WILLIAM JONES' plan, to consist of 500 pages, and each page to contain on an average 304 words, the total number of words in the volume would be 1,52,000; and if the same volume were printed according to Dr. GILCHRIST's plan, then at the rate of 7 additional letters for every 6 words, the number of extra letters will amount to 1,77,000, which would make an addition to the book of 116 pages, and instead of consisting of 500 pages it would consist of 619. Apply this to the entire literature of half the world through a succession of ages, and conceive the result, if you can. If this average is considered to be above the mark, I have no objection to suppose that every six of GILCHRIST's words contain only half the number of double letters which those above instanced do, and at this rate the book printed according to GILCHRIST's plan would exceed what it would be if printed according to Sir WILLIAM JONES' plan by 58 pages.

"Lastly, there are three characters in GILCHRIST's alphabet which do not belong to English or to any other language under the sun which we have ever heard of. These are *oo*, *ue* and *uo*. With the exception of the pupils of Dr. GILCHRIST who, from early associations and respect to their master, may naturally be expected to be admirers of his scheme, these three characters are utterly barbarous to every description of people; and it is therefore impossible for them to secure a general recognition for themselves in the breasts either of Englishmen, European foreigners or Indians. Sir WILLIAM JONES' plan, as has been before stated, contains no arbitrary sounds whatever, but is in every respect in strict accordance with the Latin and Latino-European languages. Even the *au*, of which no example is to be found in English, is perfectly familiar to every Scotchman and Irishman who knows Latin; and if a youth at Dublin College, or the High School at Edinburgh, were to pronounce *causa* like *cawsa*, he would be immediately corrected and told to sound it *cowsa*, and the same of course every where on the continent of Europe.

"It should be borne in mind that Sir WILLIAM JONES and Mr. GILCHRIST both drew from the mine of English letters, and that the only difference between them is that one appropriated the dross, while the other culled the pure gold. GILCHRIST chose the most corrupt and imperfect parts of our system, while JONES selected those which were consistent with true principles and coincided with the most perfect alphabets both of the East and West. The *f* in *police* is almost as well known in English as the double *ee* in *feel*. The *u* in *pull* is certainly better known than *oo*, which is pure GILCHRISTIAN. The *ú* in *rule* is as familiar as the double *oo* in *cool*. The *ai* in *aisle* is assuredly far more common than *ue*, which is another arbitrary sign to be found nowhere except in the books printed by Dr. GILCHRIST himself. The *au* in *causa* (Latin pronunciation) is also better under-

stood than *uo*, which is another Gilechristian hieroglyphic ; and even the short *a*, the stumbling-block of our GILCHRISTIAN friends, is quite as familiar to us as their favourite *u*, and any body who will take the trouble to look in the English Dictionary, will see it used at the commencement of 500 words like *above*, *about*, *abound*, and so forth."

We have not space to continue our extract, nor does the remainder of the author's reasoning bear upon the precise question at issue. He however mentions one strong fact in support of his object ; namely, that the Italian orthography has been adopted by the American missionaries for the language of the Sandwich Islands. To this we may add, that the same as far as regards the vowels is uniformly upheld by Professor RASK of Copenhagen, the celebrated philologist, who has devoted years of study to the fixing of accurate Roman equivalents for the Zend, Arabic, Sanscrit, Armenian, and other alphabets. We recommend his essay "*de Pleno Systemate Decem Sibilantium in Linguis Mortanis, &c.*" to the serious attention of all those engaged in similar objects ; the following caution applies to the case of the Bengálí and other dialects derived from the Sanscrit stock, in which it has been opposed to the uniform system, that the inherent short vowel having the sound of *o* could not be represented by *a*.

"*Altera cautela haud parvi momenti est, ubi lingua quædam antiqua quodammodo adhuc vivit, nimirum ne pronuntiatione hodierna, si a litera discedat, pro genuina assumpta, scripturam antiquæ linguæ ad eam exprimendam depravemus, vocumque etymologias turbemus.*"

The above remark of course equally opposes any reform of the *spelling* of an established language like the English or the French to suit the modern pronuntiation. His concluding paragraph will afford encouragement to those who calculate upon the eventual substitution of the Roman characters for those of India, although he is far from anticipating any such effect even for the limited country, Armenia, (Christian though it be) to whose language his essay refers.

"His observatis, haud ita difficile est scripturam Europæam cuius linguæ peregrinæ accommodare, atque ita quidem ut ipsa gens, si per commercium Europæorum tale systema existere resciverit, immensum ambitum literaturæ gentium Europæorum intellexerit, fructum, oblectationem, gloriam inde redundantes consideraverit, haud reluctantem id suum facere velit, saltem viri docti non solum voces singulas accuratè et sine ulla confusione citare, sed quodlibet scriptum gentis ita transcribere et facili negotio typis exprimere ; immo transcribendo comoda quædam pensa in studio suo hand parum levare poterunt." *Commentatio &c. Aut. E. Rask, Hafniæ, 1832.*

Royal Asiatic Society of Great Britain and Ireland.

We observe that this Society has come to the determination of publishing its future Transactions in the form of a *Journal* in octavo, to appear once in three months, price 6s. We cannot but feel that this resolution strengthens greatly the arguments in favor of the plan adopted and pursued now for nearly six years by Captain HERBERT and ourselves, for whatever can be urged in support of a quarterly journal—the early appearance of papers, the cheap and convenient form for circulation, &c. will apply more forcibly to a monthly periodical. This is the only form in which the lucubrations of the French Asiatic Society—a Society yielding to none in the erudition and activity of its members—have hitherto appeared.

The cover of the present number contains the prospectus of the new journal.

X.—*Catalogue of Birds of the Raptorial and Insectorial Orders, (systematically arranged,) observed in the Dakhan, by Lieut.-Colonel W. H. SYKES, Bombay Army, F.L.S., F.G.S., F.Z.S. M.R.A.S.*

In the first volume of the Journal, page 161, we presented Col. SYKES's catalogue of the Mammalia of South India. This officer's fame as a naturalist has, we are happy to see, raised him to a Vice President's chair in the Zoological Society of London. In the proceedings of this active institution for April, 1832, (the arrival of which in India was by some accident delayed,) we perceive the following useful catalogue of the birds of the same country, which we hasten to transfer to our Journal. The list is prefaced by the following remarks:

Lieut.-Colonel SYKES, having brought before the Committee at previous meetings various *Birds of the Raptorial and Insectorial Orders*, collected by him during his residence in Dakhan, completed on the present evening the exhibition of his collection of those orders. He limited his observations on the several species to brief extracts from the copious notes which he had made in India respecting their habits, internal anatomy, and geographical distribution. In bringing them in succession under the notice of the Committee, he observed the order adopted in the following catalogue:

ORDER 1. RAPTORES, III.

Fam. *Vulturidæ*, Vigors.—Genus *Vultur*, Auct. *Vulture*.

1. *Vult. Indicus*, Lath. *Vautour Indou*, Temm., Pl. Col. 26. *Mahah Dhoh* of the Maharrattas.

Irides deep brown. Length 42 inches, inclusive of tail of 10½ inches. A stone half an inch in diameter was found in the stomach of one bird. The proportional length of the intestine to the body in these birds is 3 to 1, while in the *Neophron Percnopterus* it is 5·20 to 1. They congregate in flocks of twenty or thirty. On a dead camel, or horse, or bullock being thrown out on the plain, numbers of these *Vultures* are found assembled round it in an incredibly short time, although they may not have been seen in the neighbourhood for weeks before. Col. SYKES's specimens are no doubt referable to M. TEMMINCK's species, although the latter bird is described as having whitish *irides*.

2. *Vult. Ponticerianus*, Lath. *Vautour Royal de Pondicherry*, Sonn., p. 182. pl. 104.

The *irides* are described by SHAW as red, while in two of Colonel SYKES's specimens they were of a deep brown, and in the third of a bright straw-yellow; but as the last had allowed itself to be captured by hand, had only grass and stalks of herbaceous plants in the stomach, and was evidently ill, the pale colour of the *irides* may be attributed to disease. Sexes alike in plumage. Mostly solitary. Colonel SYKES seldom, if ever, saw more than two together. The remarkable flatness of the crown, and very great width of the *cranium*, would seem to indicate a generic difference between this species and the *Vult. fulvus* and *Bengalensis*. Length of bird 36 inches, inclusive of tail of 11 inches.

3. *Vult. Bengalensis*, Gmel. *Bengal Vulture*, Lath. *Geed* of the Mahrattas.

Of a smaller size, and with shorter and stouter legs than *Vult. Indicus*. Habits similar. Sexes alike. Length 30 inches, inclusive of tail of 10 inches. Colonel SYKES was induced to consider this species of Gmelin as distinct from *Vult. cinereus*, with which it has been classed by M. TIMMINCK, in his *Manuel d'Ornithologie*, p. 4.

Genus *Neophron*, Sav.

4. *Neophron Percnopterus*. *Vultur Percnopterus*, Linn. *Rachamah*, Bruce, Trav. Append. p. 163.

Irides intense red brown. Gregarious. Sexes alike in adult birds; but non-adult birds vary in plumage from fuscous to mottled brown and white. These birds are always found in cantonments and camps. For the most part of the day they continue on the wing, soaring in circles. When on the ground, they walk with a peculiar gait, lifting their legs very high. They are efficient scavengers. Length 29 inches, inclusive of tail of 11 inches.

Fam. *Falconidæ*, Lench.

Sub-Fam. *Aquilina*. *Eagles*.

Genus *Haliaeetus*, Sav. *Sea Eagle*.

5. *Hal. Ponticerianus*. *Falco Ponticerianus*, Lath. *Aigle de Pondicherry*, Buffon, p. 136, Pl. Enl. 416. Called *Brahmany Kite* by Europeans in India.

Irides reddish brown. It is seen constantly passing up and down rivers at a considerable height, but prepared to fall at an instant on its prey. Usually it seizes while on the wing, but occasionally dips entirely under water, appearing to rise again with difficulty. It is quite a mistake to suppose it feeds on carrion. Colonel SYKES has examined the contents of the stomach and crop of many specimens, and always found fish, and fish only, excepting on one occasion, when a crab was

met with. Sexes alike. Female lays two large white eggs. Length, inclusive of tail, 19 to 21 inches : tail 9 inches.

Genus *Circæetus*, Vieill.

6. *Circ. brachydactylus*. *Falco brachydactylus*, Wolf. *Aquila brachydactyla*, Meyer. *Falco Gallicus*, Gmel., p. 295. sp. 52. *Le Jean le Blanc*. Pl. Enl. 413.
Colonel SYKE'S specimen was a female. Irides deep orange at the external margin, passing to straw-yellow at the internal margin. The remains of a snake and two rats were found in the stomach. Length, inclusive of tail, 30 inches : tail 11 inches.

Genus *Aquila*, Auct.

7. *Aq. chrysaëta*. *Falco chrysaëtos*, Linn. *Golden Eagle*, Lath.
Colonel SYKE'S specimen differs so slightly from the European bird as not to justify its separation.
8. *Aq. bif. asiatica*, Hardwicke and Gray's Ind. Zool.
Irides brownish yellow ochre. Sexes alike in plumage ; non-adult birds paler than adults. A whole rat found in the stomach of one bird. A second bird was shot by Colonel SYKE at the dead carcass of a royal tiger ; but it had not tasted the banquet, as the stomach was empty. Length, inclusive of tail, 30 inches : tail 11 inches.

Genus *Hæmatornis*, Vigors.

9. *Hæm. Bacha*. *Falco Bacha*, Daud. pl. 22. *Le Bacha*, Le Vaill., Ois. d'Afr. pl. 15.

Colonel SYKE'S collection does not possess a specimen, but he identified a specimen in the possession of a friend, shot in the Dakhan.

Sub-Fam. *Accipitrina*. Hawk.

Genus *Accipiter*, Ray. Sparrow Hawk.

10. *ACCIPITER DUKHUNENSIS*. *Acc. supra fusco-brunneus, plumarum marginibus pallidioribus, capite postico nuchâque albo variegatis ; subtilius albus, pectore abdomineque notis subrotundatis grandibus, femorum tectricibus parvis, rufescentibus striatis ; tectricibus fusco fasciatis, fasciis externarum confertioribus ; tarsi subbre-*

Irides stramineo-flavæ, margine gracili nigro circumdatæ.

Longitudo corporis 14½ unc., caudæ 6½, tarsi 1½.

Sexes alike in plumage. Resembles the *Acc. fringillarius*, but differs in the longitudinal broad reddish patches on the breast, in less red on the sides, in a black narrow streak down the throat, in shorter wings, in the tail having six broad bars instead of four, in the male bird being as large as the European female, and finally in the shorter tarsi and centre toes.

11. *Acc. Dussumieri*. *Falco Dussumieri*, Temm., Pl. Col. 308. female.

Irides bright yellow, with an exterior narrow margin of black. Wings short. Tail long and narrow, being only the width of the upper feather. M. TEMMINCK'S specific characters are taken from a female, the male being unknown. Colonel SYKE'S has but one specimen, and that a female, the male being unknown to him. Length, inclusive of tail, 12½ inches : tail 6¼ inches.

Genus *Astur*. Auct. Goshawk.

12. *ASTUR HYDER*. *Ast. corpore supra et subtilius brunneo, dorso imo rufescenti, plumarum rhachibus fuscis, alarum tectricibus albo notatis ; abdomine maculis albis fasciato ; frontis fasciâ gracili guttureque albis, hoc lineis tribus latis fuscis, una in medio, cæteris utrinque ad latera, notato ; femorum tectricibus crissoque albis, rufo fasciatis ; caudâ supra rufâ, fasciis quinque gracilibus, ferè obsoletis, alterâque prope basin latâ, fuscis notatâ ; remigibus fusco-brunneis ad apicem fuscis, pogoniis internis fasciis quinque fuscis gracilibus, alboque ad basin notatis.*
Rostrum ad basin flavum, ad apicem nigrum. Pedes flavi ; unguibus nigri.
Longitudo corporis 16½—17 unc., caudæ 6½—7.

This bird has the three stripes upon the throat, and the aspect of *Falco trivirgatus*, Temm., fig. 303, but it is a much larger bird than M. TEMMINCK'S, and has otherwise characters in the plumage to entitle it to a specific distinction. A couple of mice were found in the stomach of one bird. Sexes alike in plumage. Female a little larger than the male.

Sub-Fam. *Falconina*.

Genus *Faco*, Auct. Falcon.

13. *Falco Tinnunculus*, Linn. *Kestrel*.

Irides intense brown. A very abundant bird in the Dakhan. Both sexes are absolutely identical with the European birds in their characteristic plumage.

Colonel SYKES, nevertheless, mentions his being in possession of a male bird exactly like the female of the *Kestrel* in plumage and size, and, consequently, larger than the male *Kestrel*: and as this was shot from a party of five or six, perched on the same tree, and without a male *Kestrel* in company, he is induced to believe there is a distinct species, in which both sexes have the plumage of the female European *Kestrel*. Remains of rats, mice, lizards, grasshoppers, and a bird, were found in the stomach of several specimens. In one stomach the remains of no less than four lizards were met with.

14. *Falco Chicquera*, Lath. *Le Chicquera*, Le Vaill., Ois. d'Afr. pl. 22.

Irides sanguineus. A common bird in the Dakhn. Sexes alike in plumage. Female usually the larger bird; but Colonel SYKES has a male quite as large as any female. A sparrow was found in the stomach of one male bird, and a young bat in the stomach of another.

Sub-Fam. *Buteonina*. Buzzards.

Genus *Circus*, Auct. Harrier.

15. *CIRCUS PALLIDUS*. *Circ. pallidè griseus, alis dorsoque saturationibus; subtis albus, uropygio albo, griseo fasciatim notato; rectricibus, duabus mediis exceptis, griseo alboque fasciatis; remigibus tertiam quartam quintamque fuscis.*

Irides viridi-flavæ. ♂. Longitudo corporis 19½ unc., caudæ 9½; ♀ corporis 21½; caudæ 10.

This bird has usually been considered the *Circ. cyaneus* of Enropé; but it differs in the shade of its plumage (male and female); in the hack-head of the male not being white spotted with pale brown; in the absence of dusky streaks on the breast; in the rump and upper tail-coverts being white barred with brown ash; in the inner webs of four of the tail-feathers not being white; and in the bars of the under tail being seven instead of four. The female resembles the female of *Circ. cyaneus*, but the plumage is two shades lighter, the tail is barred with six broad fuscous bars, instead of four, and the tail-feathers are much more pointed. The remains of six lizards were found in the stomach of one bird. Colonel SYKES never saw these birds perch on trees. They frequent the open stony plains only. The sexes were never seen together.

16. *CIRCUS VARIEGATUS*. *Circ. capite suprâ, nuchâ, ptilis, pectoreque rufis, plumis in medio latè brunneis; dorso scapularibus, remigibusque externis intense brunneis; pteromatibus, remigibus internis, candâque griseis; abdomine femorumque tectricibus rufis; caudæ tectricibus superioribus rufo albo brunneoque, inferioribus griseæ saturatione, notatis. Longitudo corporis 21 unc., caudæ 10.*

This is a very remarkable bird, and in its plumage seems to possess much of the united characters of the sexes of this genus, which are known generally to exhibit a marked difference. Colonel SYKES possesses but one specimen, a male.

Sub-Fam. *Milvina*.

Genus *Milvus*, Auct. Kite.

17. *MILVUS GOVINDA*. *Milv. capite, nuchâ, corporeque subtis rufescenti-brunneis, plumis in medio fusco lineatis; dorso, alis, caudâque satis furcatâ saturatè brunneis, illarum pteromatibus pallidioribus, hac fusco obsoletè fasciato. Longitudo corporis 26 unc., caudæ 11.*

This bird differs from the *Falco Cheele* in the want of white spots on the wing-coverts, white before the eyes, and white bar on the tail; in having the inner webs of the tail-feathers barred with numerous narrow bars, and in the shafts of the feathers about the head and neck, and generally underneath, being very dark. Sexes alike. Constantly soaring in the air in circles; watching an opportunity to dart upon a chicken, upon refuse animal matter thrown from the cook-room, and occasionally even having the hardihood to stoop at a dish of meat carrying from the cook-room to the house.

Fam. *Strigida*, Leach.—Genus *Otus*, Cuv.

18. *Ot. Bengalensis*, Franklin, Proceed. Zool. Soc. I. p. 115, *Goobur* of the Mahrattas. *Irides*, external margin dark orange, gradually changing to yellow at the internal margin. Very common in the Dakhn. Generally found on the open rocky plains. A whole rat, (the tail hanging out of the mouth, and the head and most part of the body in the stomach, and partly decomposed,) was found in one bird: another had a crab, a third a *pastor*; but the usual food appeared to be rats.

Genus *Strix*, Auct.

19. *Strix Javanica*, Horsf.

Although at a superficial view this species appears to be the *barn-door Owl* of Europe (*Strix flammea*), a comparison of several specimens with the European bird satisfies Colonel SYKES that Dr. HORSFIELD was right in separating it. Neither sex is unspotted white underneath, nor has the Indian species a white disc. Sexes

alike, with the exception of the plumage of the female being a shade or two lighter than that of the male. Length, inclusive of tail, 17 inches: tail 5 inches. One of Colonel SYKES's specimens was captured alive while lying on its back on the ground, defending itself against the attacks of a body of crows. Irides reddish dark brown.

20. *STRIX INDRANEE*. *Strix capite suprà pallidè brunneo, plumis albidò marginatis; dorso imò, pteromatibusque rufescenti-brunneis, fasciis albis fusco marginatis notatis; dorso medio, ptilis, remigibus caudique brunneis, his rufescenti fasciatis, hác faciis albidis gracilibus notatá, ad apicem albo marginatá; gula crissoque albescens; abdomine subrufo, brunneo graciliter faciato; regione circumoculari nigra; disco rufo, brunneo marginato.*

Irides rufo-brunneæ. Longitudo corporis 21 unc., caudæ 9.

Inhabits the woods of the Ghauts: rare. The specimen described is a young bird, and a female.

Genus *Ketapa*, Less.

21. *Ketapa Leschenaulti*, Less., Traité d'Ornith. p. 114. *Strix Leschenaulti*, Temm. Pl. Col. 20. *Scops? Leschenaulti*, Steph., vol. 13. p. 53.

A rare bird in the Dakhan. Independently of the naked legs of this bird, its aquiline aspect authorizes its separation from the genera with which it had been placed previously to M. LESSON's arrangement.

Genus *Noctua*, Sav.

22. *Noct. Indica*, Frankl. *Peenglah* of the Mahrattas.

Irides, King's yellow. Sexes alike. Mice and beetles found in the stomach. An exceedingly noisy bird, and frequently heard chattering during the day-time in dense trees. The Mahrattas have a superstition respecting this species; and a class of persons, called from it *Peenglah*, live on the credulity of the people by pretending to consult it, and predict events. Length, inclusive of tail, 9½ to 11 inches: tail 2½ to 3 inches. Numerous in the Dakhan, and found in families of four or five.

ORDER II. INSESSORES, Vigors.

Tribus FISSIROSTRES, Cuv.

Fam. *Meropidæ*.—Genus *Merops*, Linn.

23. *Merops viridis*, Linn. *Indian Bee-eater*, Lath. *Guépier à collier de Madagascar*, Buff.

Fam. *Hirundinidæ*, Leach.—Genus *Hirundo*, Auct.

24. *Hirundo filifera*, Steph., vol. 13. p. 79. *Hir. filicaudata*, Frankl.

Very abundant in Dakhan, and very beautiful, with its thread-like tail-feathers floating behind when in flight.

25. *HIRUNDO JEWAN*. Mas. *Hir. capite, dorso, tectricibus alarum, uropygio, rectricibus mediis fasciisque latè pectorali metallicè nigris; corpore subtilius rosaceo-albo; gutture rufo; remigibus rectricibusque lateralibus fusco-nigris, his internè albo maculatis.*

Fam. et jun. *Gutturæ magis rufo notato.*

Irides intensè rufescenti-brunneæ. Longitudo corporis 6 unc., caudæ 3½.

This bird differs from the common English Swallow, (*Hir. rustica*,) only in its somewhat smaller size, larger bill, and in the lateral tail-feathers not being equally elongated. The tail is less forked, and the rufous colour of the throat extends more on the breast.

26. *HIRUNDO CONCOLOR*. *Hir. fuliginoso-brunnea, sericea; caudæ æquali, rectricibus, externis mediisque exceptis, internè albo guttatis.*

Longitudo corporis 5 unc., caudæ 2½.

These birds live on the banks of rivers. The plumage of the sexes does not differ.

27. *HIRUNDO ERYTHROPYGIA*. *Hir. metallicè nigra; uropygio collarique nuchali rufis; corpore subtilius albo, pallidè rosaceo tincto, plumis in medio graciliter brunneo striatis.*

Longitudo corporis 6 unc., caudæ 3.

This species appeared in millions in two successive years in the month of March on the parade-ground at Poona: they rested a day or two only, and were never seen in the same numbers afterwards.

Genus *Cypselus*, Ill.

28. *Cypselus affinis*, Hardw. *Allied Swift*, Hardw.

These birds are so rare in Dakhan that Colonel SYKES obtained only two specimens.

Fam. *Caprimulgidæ*, Vigors.—Genus *Caprimulgus*, Auct.

29. *Caprimulgus monticolus*, Frankl. *Great Bombay Goat-sucker*, Lath.

30. *Caprimulgus Asiaticus*, Lath. *Bombay Goat-sucker*, Id.

31. *CAPRIMULGUS MAHRATTENSIS*. *Capr. pallidè cinereo-griseus, brunneo ferrugineoque undulatus variegatusque; thorace, remigibus tribus externis in medio, rectricibusque duabus lateralibus ad apices, albo notatis.*
Longitudo corporis 8.8 unc., caudæ 5.5.

This species differs from the two preceding in the prevalent grayness of the plumage, and in the absence of the subrufous collar on the nape of the neck.

Fam. *Halcyonidæ*, Vigors.—Genus *Halcyon*, Swains. *Crab-eater*.

32. *Halcyon Smyrnenensis*. *Alcedo Smyrnenensis*, Linn. *Smyrna Kingfisher*.

In the description of this bird authors appear to have omitted to mention the chestnut small wing-coverts, and fine rich chocolate black medial wing-coverts. This species frequents well irrigated gardens and old wells, rather than brooks or rivers. Grasshoppers were frequently found in the stomach.

Genus *Alcedo*, Auct. *Kingfisher*.

33. *Alcedo rudis*, Linn. *Black and White Kingfisher*, Edw., pl. 9.

In all Colonel SYKES'S specimens the male bird is distinguished from the female by a single or broken double black bar across the breast.

34. *Alcedo Bengalensis*, Gmel. *Little Indian Kingfisher*, Edw., pl. 11.

This species affects brooks: it is never seen in gardens.

Genus *Ceyx*, La Cép.

35. *Ceyx tridactyla*, La Cép. Buff., Pl. Enl. 778. fig. 2.

This very beautiful bird differs from BUFFON'S drawing only in a purple spot terminating the ridge of the bill, and in a reddish spot on each side of it.

Tribus DENTIROSTRES, Cuv.

Fam. *Muscicapidæ*, Vigors.—Genus *Muscipeta*, Cuv.

36. *Musc. Paradisi*, Cuv. Mas. *Musc. alba; capite cristato colloque violaceo-atris; pteromatibus renigibusque atris albo marginatis; rhachibus rectricum atris.*

Fœm. *Dorso, alis, caudæque castaneis; corpore subtilis albo; gutture, collo, pectore, nuchæque griseis, hâc saturatori; capite cristato violaceo-atro; remigibus fuscis.*

Longitudo corporis 10½ unc., caudæ 6.

Muscipeta Paradisi, Linn. *Paradise Fly-catcher*, Lath. *Avis Paradisiaca orientalis*, Seba, 1. t. 52. f. 3. *Pied Bird of Paradise*, Edw., pl. 113.

37. *Muscipeta Indica*, Steph. vol. XIII. p. 3. Mas. *Musc. corpore suprâ castaneo, subtilis albo; pectore grisescenti; capite cristato colloque violaceo-atris.*

Fœm. *mari similis. rectricibus duabus mediis paulum elongatis.*

Statura præcedentis. *Irides intensè rufo-brunnæ*

Avis Paradisiaca cristata, Seba, 1. t. 30. f. 5. *Upupa Paradisea*, Linn. *Promerops Indicus cristatus*, Briss. *Crested long-tailed Pie*, Edw., pl. 325.

These two birds have lately been erroneously considered to belong to one species.

They were never found however by Colonel SYKES (who shot many,) in the same locality, nor did he observe any intermediate stage of plumage. The difference between the females of the two birds noticed above at once decides the distinction of species. The two central tail-feathers of the males (not of the females) are elongated to three or four times the length of the body: in one specimen they are 15½ inches long. They feed principally on the ground, and on very minute insects.

There has been much confusion among the early descriptions of these birds. LINNÆUS describes the *Musc. Indica* as an *Upupa*; BRISSON as a *Promerops*; and others as a *Pica*, *Icterus*, *Todus*, *Manucodiata*, &c. The specific name of *Indica* seems to have the right of priority over that of *castanea* given by M. TEMMINCK, (See M. KÜHL'S 'Systematic Catalogue of the Pl. Enluminées, page 5,) as having originally been assigned to the bird by BRISSON. Other well marked species, nearly allied to the two preceding, the males of which have similarly elongated tail-feathers, are found in Africa and China.

38. *Muscipeta flammea*, Cuv. *Gobe-mouche flammea*, Temm., Pl. Col., 263. Male and Female.

The cry of this bird is *wheet, wheet, wheet*. In the colours, the female has yellow where the male has scarlet. *Irides* brown-black.

39. *Muscipeta peregrina*. *Parus peregrinus*, Linn. *Crimson-rumped Fly-catcher*, Lath.

Genus *Muscipeta*, Auct.

40. *Muscipeta melanops*, Vigors. Figured in GOULD'S 'Century of Himalayan Birds.'

41. *Muscipeta Banyumas*, Horsf. *Banyumas Fly-catcher*, Lath. *Gobe-mouche chanteur*, Temm.

42. *MUSCIPETA POONENSIS*. *Musc. suprâ cinereo-brunnea; subtilis sordidè alba; mandibulâ superiori nigrâ, inferiori ad basin alba.*

Longitudo corporis 4.5 unc., caudæ 1.8.

These birds sit on the extreme twigs of trees, and dart on passing insects in the manner of the *Merops viridis*.

43. *MUSCICAPA CÆRULEOCEPHALA*. *Musc. cinereo-brunnea, cæruleo leviter tincta; capite thoraceque lazulinis; pectore sublazulino; abdomine crissoque albis.*
Longitudo corporis 5 $\frac{7}{8}$ unc., *caudæ* 2 $\frac{1}{4}$.
44. *MUSCICAPA PICATA*. *Musc. supra atra, subtilius sordidi alba; strigâ a mento ad nucham utrinque extendente, fasciâ alarum, uropygio, crisso, apicibusque rectricum duarum lateralium albis.*
Longitudo corporis 5 $\frac{1}{4}$ unc., *caudæ* 2 $\frac{3}{4}$.

Genus *Rhipidura*, Vigors and Horsf. *Fun-tailed Fly-catcher.*

45. *Rhipidura albofrontata*, Fränkl.

46. *Rhipidura fuscoventris*, Frankl.

Colonel SYKES has shot both these birds in the same localities. The male has a very sweet note. He spreads and raises his tail over his head in hopping from bough to bough. Both species have the aspect and habits of the Australian bird *Muscicapa flabellifera*, Gmel. Irides deep sepia brown.

Fam. *Laniadæ*, Vigors.

Genus *Dicrurus*, Vicill.—*Edolius*, Temm.

47. *Dicrurus Balicassius*. *Corvus Balicassius*, Linn.

48. *Dicrurus cærulescens*, Linn. *Lanius Fingah*, Shaw, t. 7. p. 291.

Genus *Hypsipetes*, Vigors.

49. *HYPSSIPETES GANESIA*. *Hyps. griseo-brunnea, subtilius pallidior; ulis remigibusque brunneis; capite supra vix cristato metallicè utro.*
Longitudo corporis 10 unc., *caudæ* 4. Irides intense rufo-brunneæ.

Tongue bifid, and deeply fringed; sexes exactly alike. Stony fruit found in the stomach. Neck short, and head sunk into the shoulders; flight very rapid. Found only in the dense woods of the Ghauts. The tongue is that of *Pustor*, the legs those of *Dicrurus*.

Genus *Collurio*, Vigors.

50. *COLLURIO LAHTORA*. *Coll. pullidè griseus; strigâ frontali per oculos utrinque ad nucham extendente, alis, rectricibusque mediis nigris; corpore subtilius, fasciâ alarum, scapularium marginibus, rectricibus externis, apicibusque duarum sequentium.*
Longitudo corporis 9 $\frac{1}{2}$ unc., *caudæ* 4 $\frac{1}{2}$.

This is the variety C. of *Lanius Excubitor* of Dr. LATHAM. It is closely allied to the North American and European *Lun. Excubitor*, but differs in the black bar extending across the forehead. The male has a sweet note.

51. *Collurio erythronotus*, Vigors. *Proceed. Zool. Soc. I. p. 42.*

This bird differs from the *Lun. Bentel* of Dr. HORSFIELD only in the crown being ash-coloured instead of black, and in the defined black bar across the forehead.

52. *Jun. ? abdomine graciliter fasciato.*

Supposed young of the above. Length 7 $\frac{1}{2}$ inches: tail 3 $\frac{3}{8}$.

53. *Collurio Hardwickii*, Vigors, *Proceed. Zool. Soc., I. p. 42.* *Bay-backed small Shrike*, Lath.

Genus *Lanius*, Auct.

54. *Lanius Muscicapoides*, Frankl. *Keroula Shrike*, Lath.

A rare bird. Colonel SYKES's specimen, a female, corresponds with Major FRANKLIN's specific characters, and with his specimen, a male bird.

Genus *Graucalus*, Cuv.

55. *Graucalus Papuensis*, Cuv. *Corvus Papuensis*, Gmel. *Papuan Crow*, Lath.
Irides, rich lake.

Genus *Ceblepyris*, Cuv.

56. *Ceblepyris fimbriatus*, Temm. *Echenilleur frangé* ♀ Pl. Col. *Irides* orange.

Colonel SYKES's birds, full-grown males, correspond only to the female of *Ceb. fimbriatus*, and not at all to the male. Met with only in thick hedges on the plains.

57. *Ceblepyris canus*. *Le Grand Gobe-mouche cendré de Madagascar*, Pl. Enl. 521.

Irides, intense red brown. Black ants only found in the stomach. This bird does not correspond with the later descriptions of *Ceb. canus* (*Muscicapa cana*), and the history of both these species of *Ceblepyris* requires further illustration. Found only in thick bushes. Specimens of both species from Bengal and Wy-naad resemble those collected by Colonel SYKES.

(To be Continued.)

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of August, 1834.

Days of the Month	Barometer reduced to 32° Fahr.			Thermometer in the Air.					Depression of Moist-bulb Thermometer.				Hair Hygrometer.		Rain. Inches.	Wind.			Weather.			
	At 4½ A.M.	At 10 P.M.	At 4 P.M.	At 10 P.M.	Minimum at 4½ A.M.	At 10 A.M.	Max. by Reg. Ther.	At 4 P.M.	At 10 P.M.	At 4½ A.M.	At 10 A.M.	At 4 P.M.	At 10 P.M.	At 4 P.M.		At 10 A.M.	Morning.	Noon.	Evening.	Morning.	Noon.	Evening.
1	322	272	178	260	81.5	86.6	88.0	86.4	80.8	1.5	4.6	3.9	1.0	98	98	2.20	n.	n. e.	N. W.	clear.	shows.	hard rain.
2	210	236	110	220	82.0	84.0	85.5	84.9	80.4	4.0	3.0	3.4	1.1	99	99	4.10	N. W.	n. w.	N. W.	rain.	high wind.	high wind.
3	066	063	8-290	153	80.4	82.4	83.8	83.0	77.3	2.6	3.1	3.0	0.0	99	99	7.0	N. W.	N. W.	O. S.	gale, rn.	lull	hd-gale S.
4	245	352	9-244	410	81.0	82.6	86.7	83.2	79.3	3.0	3.0	3.0	0.5	99	99		S. E.	N. E.	S. E.	rain.	showery.	bazy.
5	389	446	368	465	79.0	82.6	86.0	84.2	82.1	0.6	2.9	3.0	1.1	99	99		E.	S. E.	O.	cum.	stratus.	dull-calm.
6	450	442	362	437	81.0	83.5	86.1	82.2	80.0	0.6	2.7	2.6	1.6	99	99		O.	N. E.	N. E.	cloudy.	cum. str.	rain.
7	389	396	348	447	76.1	81.4	84.4	82.9	80.0	0.8	2.5	3.0	1.0	99	99	1.35	N. E.	S. E.	N. E.	stratus.	rain.	hd. rain.
8	427	408	396	436	80.2	81.8	85.2	83.9	84.0	1.5	2.5	3.3	4.2	99	98	50	N. E.	S. S.	S. S.	cum.	showery.	do
9	437	408	468	430	81.4	82.3	86.5	84.0	84.2	2.7	2.6	4.1	4.2	99	98	20	S.	S.	S.	do	rain.	storm NW.
10	528	520	420	532	83.8	83.6	88.0	86.1	81.0	3.8	2.8	4.5	3.5	99	98	70	S.	S.	S.	clear.	clear.	clear.
11	561	554	370	618	82.0	84.6	89.2	88.4	84.7	2.2	3.2	5.3	2.0	98	92	05	S. W.	S. S.	S. w.	do	cloudy.	steady rain
12	535	558	458	582	82.2	85.6	89.5	88.5	80.1	2.0	4.0	5.9	1.6	95	94	245	W.	S. w.	S. w.	do	misty	rain.
13	532	560	408	573	81.5	85.2	88.7	87.1	82.0	3.1	3.0	3.8	2.8	97	96	95	W.	O.	O.	cum. str.	thundering	thundering
14	501	529	406	545	84.2	84.3	87.6	86.7	85.4	2.4	3.4	3.7	4.7	96	96	95	W.	O.	O.	haze.	fine.	cum. cirri.
15	519	500	522	605	83.5	84.2	88.4	87.4	84.2	3.5	3.4	4.2	3.8	97	96		W.	O.	O.	rain.	do	do
16	581	526	540	614	80.4	85.4	90.2	88.4	85.0	2.1	3.5	6.6	3.6	96	94	25	W.	W. S.	S.	cumulus.	do	clear.
17	575	568	524	630	81.1	86.4	90.0	88.9	82.0	3.9	4.0	5.1	1.2	96	94		n. w.	S. e.	S. e.	rain.	cumuli.	fine.
18	631	646	572	646	81.0	85.6	88.9	86.9	83.4	3.0	3.3	3.7	3.7	97	95	05	e.	S. e.	S. e.	cumuli.	showery.	cum. cirrus.
19	629	639	601	688	81.1	85.5	88.9	87.5	83.4	3.2	4.2	7.8	3.4	96	92		S.	S. w.	S. e.	cl. cum.	cloudy.	cumuli.
20	627	638	628	695	82.1	85.7	89.3	87.5	83.0	2.8	4.7	7.6	3.4	96	92		S.	S. e.	S. e.	do	rain.	do
21	666	694	660	750	78.0	85.5	86.3	87.2	80.2	2.5	5.1	7.7	2.3	97	93	80	S.	S. e.	S. S.	hard rn.	showery.	clear.
22	733	758	672	750	80.0	84.9	88.7	87.2	85.2	2.6	4.4	7.2	3.5	95	94	20	S.	S.	S.	clear.	clear.	clear.
23	748	780	628	683	79.8	84.9	88.4	87.2	85.2	2.6	4.4	7.2	3.5	95	93	03	O.	S.	O.	clear.	fine.	bright.
24	685	681	552	628	83.1	86.3	92.0	89.6	88.2	3.3	7.3	9.4	7.1	90	87		O.	S. w.	O.	do	cumuli.	do
25	617	618	508	592	83.4	87.9	93.0	92.3	87.0	3.2	7.6	9.6	6.5	91	87		O.	S. w.	S.	do	do	do
26	576	624	480	595	84.4	88.4	93.6	90.6	85.5	3.1	5.4	5.8	3.7	96	94	20	S.	O. w.	O.	do	do	cl. hy. rn.
27	569	587	496	600	83.2	88.0	91.8	89.5	84.3	2.5	6.0	5.9	3.3	93	93		O.	O. w.	O.	cumuli.	overcast.	bright.
28	576	615	512	605	82.6	88.5	93.6	87.0	81.9	2.0	5.3	5.9	2.1	95	95		O.	S.	O.	do	do	do
29	532	630	516	568	81.2	87.9	92.8	87.6	81.2	0.9	5.9	6.7	1.0	96	96		O.	S.	O.	clear.	showery.	do
30	523	614	516	564	81.4	87.2	91.1	87.6	83.0	1.4	5.0	5.2	2.8	96	95		S. e.	n.	S. e.	do	do	do
31	524	605	565	605	80.7	89.2	90.0	87.5	82.2	0.7	5.1	5.3	2.4	96	96	40	S. e.	S. e.	S. S.	do	do	do
Mean	59.518	549	456	559	81.4	85.1	88.8	86.7	82.6	2.3	4.2	5.3	2.9	96.5	95.3	15.25	severe gale.			heavy rain—latter half fine.		

The Barometer fell during the lull of the storm on the 3d at 4 P. M. to 29.830. At Allahabad, whither the same storm extended, the Barometer stood on the 30 July at 29.220. On the 31st 4 P. M. at 29.160: 1 August, at 29.165: 2nd do, 29.18: 3rd do, 29.145 storm about 7 P. M. from the south-east. Great inundations occurred about the 9th to Burdwan, Monghyr, Patna, and Arrah; also at Nâgpur, and on the west of India at Surat.



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